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The Report of the Royal Commission on the Housing of the Poor.

THE first portion of the Commissioners' Report, now published, deals with the questions submitted to their investigation so far as concerns England. The further consideration of the subject as regards Scotland and Ireland is to be carried on, and the result published in a future report. As the qualifying phrase "first portion" only refers to the fact that the present report does not include Ireland and Scotland, we may regard the report as complete so far as it goes, and consider what is the result it offers in the way of an escape from the lamentable state of things to which it refers.

The Report signed by all the Commissioners occupies nearly fifty-eight pages, and to this are appended other sub-reports conveying the special views of sections or individuals of the Commission in regard to points on which the whole of them are not in accordance. Thus, a brief Report, charging the system of leasehold building with many of the evils connected with overcrowding, unsanitary buildings, and excessive rents, is signed by Cardinal Manning, Lord Carrington, Lord Provost Harrison, Messrs. Lyulph Stanley, Gray, Torrens, Broadhurst, Jesse Collings, Godwin, and S. Morley. The Marquis of Salisbury follows with a memorandum rather in elucidation and amplification of various points of the main Report than in dissension therefrom, and the Bishop of Bedford concurs in this memorandum, except in regard to a proposal to dispose of present sites of prisons at cost price, as sites for workmen's dwellings, instead of at market price; but the Bishop does not give the reason for his dissension. A joint memorandum by Mr. Goschen and Mr. Lyulph Stanley is occupied in insisting on the establishment of a strong central Municipal authority in London, before any real progress can be made, in proposals for increasing the liability of owners (in which Lord Brownlow concurs), and in making further recommendations (to be noted hereafter), for facilitating commercially the provision of increased house accommodation. Mr. Morley adds his signature to this memorandum. Mr. Goschen, in a further memorandum (Sir R. Cross concurring), objects to a recommendation of the Report in reference to rating vacant land on its selling value, and not on its income. Sir R. Cross adds another memorandum on certain points in regard to the action of local authorities, who should not, he thinks, compete with private enterprise, except in regard to the provision for the very lowest class,—the waifs and strays,—for whom it is desirable to have lodging-houses, which can be under the strictest official supervision. Mr. E. Dwyer Gray adds a very long memorandum containing propositions of a more stringent character than a majority of any Royal Commission could probably be got to agree in, and prefacing his remarks by a statement that while he had "no difficulty" in signing the general Report, he felt that even if all the recommendations therein suggested were adopted, "they would scarcely have an appreciable effect upon the terrible evils which the Commissioners have so laboriously elucidated." Mr. Broadhurst follows with a long memorandum suggesting plans for facilitating the transfer of land; Mr. Jesse Collings with another long one containing subsidiary comments on various important points, in which Mr. Broadhurst and Mr. Morley concur; Cardinal Manning and Lord Carrington concurring, except in regard to a paragraph laying strong stress on the necessity of municipal reform, and the Bishop of Bedford dissenting only from recommending the compulsory provision of cottage accommodation by landowners. Mr. Godwin concludes with a short practical memorandum in regard to cheap building materials, and the Familistère Institution of M. Godin-Lemaire and other large employers of labour in France,—a memorandum which is rather by way of supplement to, than dissent from, the main Report.

The number of these sub-reports or memoranda, however, their varied and generally incisive character as contrasted with the more cautious and measured recommendations of the main Report, renders it evident how much difficulty a Commission of seventeen persons must have had in finding common ground of experiences and recommendations in which they could all concur, and forms a significant illustration of the general difficulty and intricacy of the task before them. Having indicated the main divisions into which the various Reports fall, let us now turn back to the main Report and see if we can summarise within reasonable space the information which it contains and the recommendations on which that information is based; no easy task, we must confess.

The main report is classified under four heads:—(1) Law and Facts; (2) Causes; (3) Housing of the Working Classes in the Rural Districts; and (4) Remedies and Recommendations. The third head we regard as, comparatively speaking, of minor significance in this report; for it is over-pressure and its consequences in London that really gave rise to the appointment of the Commission. And the first and main thing we look for in turning over the report, is for some definite principle, founded on ascertained facts, in virtue of which the attempt to give a dead lift to the condition of the working-classes in London in regard to their dwellings can be taken out of the region of eleemosynary work, and the objects of philanthropic legislation can be shown to be under such special conditions that special remedies, apparently at first sight at variance with sound social and economic principles, are reasonably justified and called for. For that is in reality at the bottom of the whole difficulty. It is comparatively easy for wealthy individuals or for the State itself to spend money in building better buildings, and to let them, as the Peabody buildings are let, at rents below the market rate. It is natural for people to say, seeing the horrible material and moral evils that are springing up out of the want of habitations enough for the populace, "At all events, this must be amended; whatever may become of theories of political or social economy, we must put an end to this miserable and scandalous state of things." But, philanthropic as such a feeling may appear at first sight, it is, at all events in this crude form, a false philanthropy which will end in making matters worse, in stereotyping the very evils which it seeks to relieve. When there are more people crowding into a neighbourhood than there is room for; when there are more seeking for employment in this or that branch of industry than it can possibly supply, the natural result is that the most able, thrifty, and steady get the work, and the more idle, weak, and unsteady go to the wall. Let your philanthropist now step in and say, "I will provide cheap house accommodation for these wretched ones, since they cannot afford to pay for decent lodgings, at a lower rate, and make up the difference myself"; and what is he doing but offering a premium on the further crowding in and multiplying of these idle and useless ones, and commencing a system to the development of which there is no logical termination, and which must end by coming down with a run, and making the last state worse than the first? This, as we pointed out before, is the fallacy at the bottom of Lord Salisbury's well-meant propositions, which we reviewed eighteen months ago,* and the talk raised by which was the main cause of the present Commission being organised. If the supply of workers, or of those who ought to be workers, far exceeds the demand, no conjuring will alter such stubborn facts; and the system of subsidising the masses who cannot find enough to live upon is not only in the end injurious to them, but is really an attempt to find an easy way of evading a difficulty (for

* *Builder*, November 3, 1883.

giving out of the superabundance of the wealthy is really the idlest and easiest of all forms of philanthropy), instead of boldly facing the problem and its consequences, and endeavouring to meet it in a way that will promise permanent success.

The first thing that a rational inquirer asks, therefore, is this,—Are there any special circumstances such as ought not to exist, such as are abnormal, to account for the disproportionate costliness and bad quality of the lodgings of such a large number of the poorer and poorest classes; any circumstances which put the case at all out of the usual category of supply and demand? Has any one done wrong, that these suffer, or are there merely, in plain English, more of them than can possibly earn decent food and lodging within the space they inhabit? We must look to the answer to this question before considering the reasonableness of any of the remedies proposed.

Now, in regard to the high proportion of rent to income, there are two or three suggestions to be gathered from the Report of the Commissioners, to show cause why special remedies should be adopted. One of these is mentioned under the heading, "Causes of High Rents." "High rents," we read, "are due to the competition for houses and to the scarcity of accommodation in proportion to the population."

"It might be asked, why cannot the pressure be relieved by the distribution of the now-crowded masses over the area of the metropolis, inasmuch as it is a well-known fact that for various causes certain districts contain a large number of uninhabited houses, many of which are suitable for the working classes. The answer to this query, which will have to be referred to again when the question of suburban residence is dealt with, is that an enormous proportion of the dwellers in the overcrowded quarters are necessarily compelled to live close to their work, no matter what the price charged or what the condition of the property they inhabit. It has been seen how crowded the poor central districts of London are, and one reason is that for a large class of labourers it is necessary to live as nearly as possible in the middle of the town, because they then command the labour market of the whole metropolis from a convenient centre."

Reference is then made to the cases of dock labourers, who must be near the docks, and of costermongers who must live near the neighbourhoods where alone they find a market for their wares, where they are, in fact, to a poor population what shops are to a rich one. But this is only applying to a district of London and to a certain part of the population what really applies in a wider sense to all London. House rents of all classes are abnormally high in London, office rents abnormally high in the City, because such a number of people must live or have their places of business in London. And then, in the case for instance of dock labourers, as in other cases, the overcrowding is not because the dock labourers who are employed must live near their work, but because so many more who cannot get employment except by mere good luck, also think that they must, for the sake of this chance, live in the same neighbourhood. If any one fact has been brought out more clearly than another lately about the working-classes, it is that the competition for dock labour is enormously in excess of the demand; and overcrowding, with all its attendant evils and high rents for wretched accommodation, is simply the result of the fact in this case that there are far more of the class than can possibly find remunerative employment. It is not the dock labourers who get employment who cause the overcrowding; it is those who do *not* get employment, who are too many for the labour market; and if these poor men were somewhere else in the world where their labour is wanted, there would probably be room for the decent housing of those who are wanted. The same may probably be said of men in or seeking other employments: we take the case of the dock labourers because it has been brought so prominently forward of late, and so many facts published about it. This is, then, not a question of the housing of these classes, or of overcrowding, except indirectly; it is simply the case of overcrowding of that particular market. It is of no use to talk of providing better house accommodation for these men, because the plain fact is that, poor fellows, they have no business to be there at all; they are where they are not wanted, and to help to find them house-room there is really no better than a mockery. It is they who are making the overcrowding by staying where it is clear they cannot all get a living. No doubt, as Kingsley bitterly said in "Yeast," they have committed an unpardonable sin in being in the world when they were not wanted; but the business is to find out where they may be wanted, if possible,—not to help them into a false paradise by making houses for them and leaving matters still worse for their children. The fact that London is overcrowded, that it is no use people crowding into it to look for work, will have to be forced on the conviction of the working classes sooner or later; and the longer it is staved off by a temporary philanthropic measure, the worse it will be in the end.

We do not mean to imply that the Report of the Commission proposes any eleemosynary system of providing houses for these sadly superfluous workers. What they do propose is mainly (apart from the better sanitary regulation of houses, which is a separate question) in the way of increased railway facilities for workmen living out of London; but what we do feel is that the manner in which this part of the subject is touched upon appears to pass over the consideration that the fact of too many workers in the field is the first root of the overcrowding, and that the latter is only a secondary and inevitable result. The real remedy here we take to be, for the present, organised emigration with Government assistance and direction, and a trust in the gradual results of the better education of the next generation, which would lead to greater foresight, consideration, and self-restraint. But we presume this portion of the subject was not properly within the range of the inquiries of the Commission.

Leaving on one side the question of absolute overcrowding of workers, and coming to that of the dwellings of those who do find work, but who are ill-housed at rents much higher in proportion to their income than other classes of the community, do we find any special circumstances which justify the application of special remedies? In this respect the Report brings before us, we think, one especial evil of the greatest magnitude, which ought not to exist, and which arises not out of the usual influences of supply and demand, but out of the fact that some people are not doing what they ought to consider their duty. The rents paid by a large proportion of the poorer of the working classes amount it seems, in many districts, always to a fifth, often to a fourth or more, of their small income. Even for this abnormally large proportion paid in rent they get only bad, unsanitary, and sometimes dilapidated dwellings. This latter portion of the evil is one with which, as we think the Report shows, there is at present ample legislative power to deal; what is wanted is not so much new or special legislation, as the stringent and energetic enforcement of the provisions of existing legislation. But if we ask why this high proportion in rent, then we come on what we take to be one of the greatest and most crying evils of the day in regard to the poorer class of house property, the existence and the practically irresponsible power of the middleman, the direct lessee of the property from the freeholder. He is the dragon who swallows up houses and families, and whom the modern St. George must set about slaying, and that with a will. The evidence on this point is glaring and unmistakeable. The most important information in regard to it is to be found on page 22 of the Report, in a passage founded, as the Commissioners are careful to observe, not on the evidence of clergy, philanthropists, and local and other reformers who have agreed in condemning the system; "they have preferred to confine themselves to the testimony of two witnesses who are intimately connected with the leasehold system." And here is part of this testimony:—

"The first [of these witnesses], Lord William Compton, is the son of the owner of one of the largest properties in London on which middlemen are found; the second is Mr. Boodle, the agent to the Northampton as well as to the Westminster estate. From the evidence of these two witnesses it appears that the existence of the system of house farmers is in some measure owing to the preference for middlemen on the part of both the landlord and his man of business. Moreover, this evidence shows that there is an indisposition on the part of landlords to avail themselves stringently of the provisos in their leases for re-entry and for the troublesome and costly process of ejectment of tenants in case of breach of covenant, the covenants usually including external and internal repairing, cleaning and painting, and the keeping in order of drains. Again, it was pointed out that landlords like to give short leases of decaying property, so that they may fall in when long leases expire, and the property can be dealt with as a whole more satisfactorily than it could be piecemeal. All these considerations appear to favour the middleman system, to which is attributed by Mr. Boodle the breaking up of houses built for single families into tenements, with all the evil and inconvenience attending that arrangement. This is also said to be the cause in a great measure of the enormous rents charged for the single rooms in tenement houses in which it has been seen the poor chiefly live in the worst parts of London. On the Clerkenwell Estate, Lord William Compton went very carefully into some of the figures relating to houses leased from the Marquess of Northampton by certain house farmers. In Queen-street he ascertained the exact rents received and paid by two persons of this class, *who are also members of the Vestry of Clerkenwell.** At No. 10, for instance, he found that the weekly rent of the front room was 12*s.*; of the back room, 4*s.* 6*d.*; of the kitchen, 3*s.*; of the first floor, 13*s.*; and of the second floor, 7*s.* This amounted to about 100*l.* a year, and the rent which the house-jobber paid to Lord Northampton was 20*l.* a year. The agent to the Northampton Estate allows that a middle-man might in a particular instance be making 150 per cent. per annum, not counting his outlay for repairs, but that the repairs are only wanted once in three or four years, and, therefore, in the other years he makes his 150 per cent. In what manner the repairs are carried out has already been shown in the evidence which described the condition of the houses in this and other poor quarters of the town. The house farmer is not at all anxious to encroach upon his profits, whether they are at the rate of 50 per cent. or 150 per cent., by periodical repairs. Lord William Compton stated that he shrank from calling to account the middleman for neglecting to repair, fearing that a rise in the rents would be the consequence of such a proceeding. The average income of the tenants has already been mentioned, so it is not surprising that sometimes the middlemen find a difficulty in collecting the rents on a Monday morning, and their remedy in that case seems to be a threat to raise them still higher. It was stated by witnesses that if there were more official supervision, by means of improved local government to prevent overcrowding and to enforce sanitary requirements it would be impossible for middlemen to make the large percentages they at present secure."

This last sentence, after we have just heard that the two middlemen referred to are themselves "local authorities," is a fine piece of unconscious satire. But what we wish to point out is that here is a case of misery resulting not from a natural, but from an unnatural and immoral state of things. It is, in the first place, wrong that those whose duty it is to see that property is kept in a proper state of repair and sanitation should also be those whose interest it is to neglect this duty; it is still more wrong that they should place their interest above their duty. It is this kind of thing that leads to what we hear from sanitary inspectors and medical officers sometimes, that they dare not or cannot use all their powers in regard to sanitary improvement, because in so doing they are attacking the interests of the very persons at whose will they hold their appointment, and may be cut off not only from their own means of living, but (if they have the good fortune to be independent on that score, which probably is seldom the case) from the opportunity of doing any of the partial good which they may still effect. But is not the very root of the evil behind all this? Does it not lie in the whole facts of the leasehold system (as is, indeed, partly suggested in the above quotation), and in the fact that the great freehold owners, in this generation or a preceding one, have entirely forgotten that property on a large scale entails duties on a large scale as

* The italics are our own. These are the people who are officially concerned in seeing sanitary legislation put into operation!

well as rights? We do not accuse the two freehold owners mentioned above of wilful indifference; we should probably do them great injustice in doing so, and the same may, we hope, be said of others, though we fear not by any means of all. The more thoughtful and conscientious ones may be said to be at the moment in the grip of a system which they did not create, and which they are powerless at the moment to put down. But the fact remains that a man who is in the receipt of a large income from the leaseholders on a great property, and who confines himself to the easy duty of receiving the ground-rent through his agent, and permits the middleman, merely as the least troublesome medium to himself and his agent, to exact plunder from the poor subtenants on the estate without inquiry and without check, is guilty of culpable neglect of what—though the law has not yet recognised it as his duty—is no less his duty as a moral and responsible being; and the system which allows of such a state of things is in itself rotten and intolerable, and ought to be put an end to. There are those among the ground-landlords who would probably gladly assist in doing so; there are others probably who, without any actual intention of wrong, close their eyes to it out of mere indolence and indifference; like the brothers in Keats's poem—

"Half-ignorant, they turn an easy wheel,
That sets sharp racks at work to pinch and peel."

But for all these things they must give account, and at no distant date.

As already observed, it is suggested in the first short supplementary report, signed by ten out of the seventeen Commissioners, that the system of building on leasehold land is a great cause in itself of the many evils connected with overcrowding, insanitary buildings, and excessive rents. Those whose signatures are appended to this supplementary report "are of opinion that the prevailing system of building-leases is conducive to bad building, to deterioration of property towards the close of the lease, and to a want of interest on the part of the occupier in the house he inhabits; and that legislation favourable to the acquisition on equitable terms of the freehold interest on the part of the leaseholder would conduce greatly to the improvement of the dwellings of the people of this country." It has certainly been shown that there is great tendency on the part of ground landlords to renew short leases on dilapidated portions of a property, with the view of letting the lease fall in at the same time with other longer leases that have still a few years to run, and thus dealing with the property as a whole more advantageously and economically to themselves, and, perhaps, in some cases, in the end, more advantageously to the whole property. It has also been constantly said, ever since Carlyle's brilliant prophecy, entitled "Shooting Niagara," in which he first suggested that the modern bricks were made to last out the short leases, that houses are built in a much more jerry manner than they would otherwise be, on account of the incidence of the leases giving them possibly but a short term of existence as the property of the builder. We incline to think that this influence of the leasehold system on practical building is somewhat exaggerated; at all events, that the man who would build rickety houses on that consideration would equally do so, in most cases at least, without the excuse of the leasehold system. But we would point out that a more stringent supervision of building by local authorities, aided, perhaps, by some additional legislation in the way of conferring upon them more arbitrary powers, would go far to check a great many of the evils for which not so much the leasehold system as the acquired and inherited tendencies of the jerry-builder are to blame. But we confess that, apart from this, we concur with Lord Salisbury's expression of opinion in his memorandum, that this question of acquiring the freehold has little to do with "the interest of the occupier in the house he inhabits," in reference to the class of inhabitants with whom the Commission is concerned. They are not leaseholders, they are the tenants of the leaseholder; and, as Lord Salisbury observes, the power to force the sale of the freehold on arbitration, besides being "wholly novel in principle," would, in reality, "have no other effect than to put the house farmer in the position now occupied by the ground landlord." If the Commission mean to imply that the leasehold landlord, become a freeholder, would find it more to his interest to keep the property in good condition and to build more substantial houses on it, that may be true; but, considering the way the tenants are already ridden over by the middlemen or house farmers, it would seem a rather doubtful experiment to facilitate the accession of these gentlemen to a position in which they would be without even the nominal responsibility to a higher power which they are at present under. But what surprises us is the phrase about "the house he inhabits," as if the tenants whose interests we are considering were themselves leaseholders, which certainly very few of them can be. The memorandum really seems to indicate a momentary confusion of ideas upon the subject.

The question of the influence of the house-farmer, however, in sending rents up to abnormal proportions, and of the want of proper thought of their responsibilities on the part of the great freehold owners, appears to us to be by far the most important one which is raised by the Report of the Commissioners, because there is here evidence of a forced state of the house-market arising from neglect of duty on the part of those who are finally responsible. Apart from the question of the sanitary condition of houses being properly looked after, and of the legislative power existing or required, which we will consider separately, this of the middleman appears to be the one great evil influence which is not due to the ordinary results of such evils as improvidence, drunkenness, reckless marriage, and over-population. A great deal of valuable though painful evidence is given on these subjects, as well as on the extent to which insufficient house accommodation in turn affects morality; but these matters are really part of a much larger question than the housing of the poor. To repeat what we have already urged, it is really of no practical use to take into account the problem of the better housing of those who, to begin with, are out of their place, are doing no good where they are, and who are hanging on the skirts of an overstocked labour-market in the hope of picking up some precarious means of existence. They can only be housed by efforts which are really eleemosynary, and which as such can only avail to stop a gap in a way that cannot possibly be permanent. The real question is as to the better housing of the industrious poor, those who are a really valuable part of the working community. The two sides of the question in regard to them are, Can they be supplied with houses at lower rents than at present? and Can we ensure their houses being better built and kept in better condition? We have commented upon the principal light which the Report throws upon the first part of the question. In another article we will consider what it has to tell us as to the second portion of this very serious problem.

A SUGGESTION IN SEWAGE PURIFICATION.

AN experiment has recently been made by a scientific man at Buxton, which may possibly exert an important influence with regard to the disposal of sewage. Nor is it a theoretic discovery alone. Works have been erected, at the cost of 4,000*l*., for the treatment of the sewage of Buxton (which varies in quantity from 200,000 to 1,000,000 million gallons per diem), by the process to be described; and on the 9th of April the Buxton Sewage Works at Ashwood Dale were formally opened, and the occasion was duly celebrated by a public dinner.

The Rivers Pollution Commissioners have for some time past insisted that measures should be taken by the Local Board of Buxton to rid the Wye of the poisonous contents of the drains. In the case of a town chiefly known as a health resort, the subject assumed even more than usual importance, and a deputation of the Local Board took the wise step of visiting various sewage works, of which the principles had been recommended for their adoption. They went to Birmingham, where they found a sewage farm, and also a long series of tanks, and pronounced the system a failure. No fish would live in the water. They went to Bilston, where the filtration system has been adopted. It was not, however, satisfactory. They also visited Coventry, where they saw the operation of the grinding-machines, on what is called the black-ash system, in which sulphuric acid is used. That they considered the best system they had seen. At Leamington they saw an immense sewage-farm, for the effluent of which, produced at a cost of 1,100*l*., 400*l*. was received. This they regarded as a heavy loss, and a plan that would not answer at all. They visited Hertford, where phosphate of alumina is produced by the Phosphate Manure Company. That plan they found would cost 8d. or 9d. in the pound on the rates, if applied at Buxton. It does not appear from the report under what conditions Dr. Thresh was called in to advise; but this gentleman, in the course of experiments made from time to time as to the defecation of sewage, was led to examine the water flowing from an old coal-pit, which ran to waste in the Wye, disfiguring the Public Gardens of Buxton by its course through them. This water is, in fact, a strong chalybeate spring. It contains salts of iron, aluminium, sodium, calcium, and magnesium, chiefly as sulphates, but a considerable portion of the iron is in the form of a carbonate held in solution by carbonic acid. From 1·2 to 2·4 grains of metallic iron occur in the gallon of this water.

The effect of this iron water on the sewage is remarkably prompt. The method adopted has been to mix with this natural water a certain proportion of milk of lime, and then to allow it to mix with two or three times its volume of sewage. By agitating gently a flocculent precipitate forms, and rapidly settles, leaving the supernatant fluid beautifully clear. Analyses made by Sir Henry Roscoe at Owens College are appended to the report of Dr. Thresh, from which we abstract these particulars.

Additional interest attaches to this method from the fact that its principle is much the same as that first applied at Antwerp by Professor Bischof to the purification of the waters of the River Nethe by passing them through a mixture of spongy iron and gravel. The effect of iron in the destruction of organic matter suspended in water has thus not only been previously known, but the plan has been acted on, on a considerable scale, at the Antwerp Waterworks. In 1878 Mr. Bischof, as appears from the Proceedings of the Royal Society, advocated the use of finely-divided or spongy iron as a medium for the filtration of water. It was demonstrated, according to Dr. Frankland, that filtration through spongy iron destroyed much of the organic impurity, removed colour, precipitated finely-suspended solid matter; and, above all, destroyed the germs of putrefaction, and, probably, those of all kinds of epidemic disease. In 1879 a filtering apparatus was erected at Waelhem for the filtration of the water of the Nethe. A cast-iron tank, 18 ft. 6 in. square and 11 ft. deep, was coated at the bottom with cement concrete, covered with bricks on edge. On the bricks was laid a mixture of three parts of gravel with one part of spongy iron, 3 ft. thick, which was covered with 18 inches of fine sand from the Meuse. A second filter of a similar kind was placed at a lower level, so as to receive the water that had passed through the first. The results were so satisfactory that large works were undertaken, a description of which will be found in Vol. 72 of the Proceedings of the Institution of Civil Engineers. After eighteen months' experience, it was stated at the Conference on Water Supply held at the International Health Exhibition of 1884, by Mr. Anderson, M. Inst. C.E., that, as far as the purification of the water went, Prof. Bischof's process left little to be desired; but that the working of the system had been costly.

The increasing demand for water rendering extension of these works necessary, Mr. Anderson, M. Inst. C.E., whose duty it became to advise the directors of the waterworks, made an experiment, suggested by Sir F. Abel, on the principle of passing iron through the water, instead of passing water over the spongy iron. Mr. Anderson constructed a revolving cylinder, 4 ft. 6 in. in diameter, and 5 ft. 6 in. long, which was furnished with inlet and outlet pipes, and also contained shelves or ledges for scooping up the iron used, raising it to the top of the cylinder by the rotary motion, and thus letting it fall through the water. Running water through this cylinder at 12 gallons per minute, which gives a contact of about forty-five minutes, Mr. Anderson found the water to be very heavily charged with iron. At a flow of 30 gallons per minute, 1·20 grains of iron were dissolved per gallon, which was twelve times as much as the experience at Antwerp had shown to be necessary. At 60 gallons per minute 0·9 grain per gallon was dissolved. The result of the trial proving thus successful, the revolver was sent to Antwerp, fitted with large pipes, which sent 166 gallons per minute through it, and has been at work there ever since.

Thus the history of the application of iron to the purification of water comprises a number of independent experiments and discoveries, made by different men. More than twenty-five years ago Dr. Medlock and Mr. Quick, C.E., made a number of experiments on the purification of Thames water by metallic iron. The water of the river at Battersea was left in contact with iron wire and plates in a large tank, for twenty-four hours, and the improvement in quality was very marked. It is well known to naval officers (and has been mentioned in the columns of the *Builder*) that water stored in iron tanks that have been white-washed inside becomes remarkably pure and sparkling, and that the vapidity of distilled water is removed by such storage. The Antwerp filters represent a further step in the same direction; although the propriety of the mixture of gravel with the spongy iron has been called in question. Sir F. Abel's suggestion is marked by extreme elegance; as the weak point of all filters, that of becoming choked by their own action, is avoided by the very ingenious reversal of the usual method of producing contact with the metal. A no less original step has been taken by Dr. Thresh; and the review of the advance made in twenty-five years leads to the conclusion that much yet may be done towards the perfecting of the use of iron as a purifier of water.

Dr. Frankland, an unquestionable authority on the point, states that bacteria, which are indestructible by an atmosphere of pure oxygen, of carbonic acid, of nitrogen, of sulphurous acid, and of cyanogen, are killed by a short contact with iron. As all the known forms of bacteria are affected in the same way, it is thus probable that all forms of bacterial life will be thus destroyed; and iron is the only known substance which produces this effect. Thus far, therefore, the progress of the application of iron may be taken as highly promising.

Several questions, however, remain for solution. Mr. Anderson, Dr. Frankland, and other authorities describe the action of iron as rapidly destructive of organic as well as of organised matter. In the case of the water of the Nethe, which is very impure, a contact of nine minutes is enough to dissolve 0·9 grain of metallic iron per gallon, and a contact of three minutes and a half, which presumably will not dissolve much more than 0·3 grain per gallon, is found to be more than adequate to effect purification from organic suspended matter. Indeed, the waste of iron during thirty-three days is stated at 0·176 grains per gallon of water run through the cylinder. Dr. Thresh, however, speaks not so much of destruction as of precipitation, and even says that 100 parts of dry residue from the Buxton tanks contains fifty per cent. of organic matter. The difference is cardinal. But the Burbage chalybeate water contains, together with from 1·2 to 2·4 grains of iron per gallon, fifty grains of mixed crystalline sulphates. It is thus evident that when to this heavy proportion of mineral matter is added the milk of lime thrown in to hasten precipitation, the total amount of sludge formed must be far in excess of the inorganic elements of the sewage. It is in the mass of sludge that has in some way to be got rid of that the essential weakness of all precipitation processes lies. In the present case it is intended simply to cart away the sludge in a moist state, and put it on land belonging to the Board. This mode of disposal, as Dr. Thresh justly remarks, cannot go on for ever, and sale of the sludge for manure is evidently looked forward to as a resource. Indeed, the presence of so large a portion of organic matter in the dry residue is evidently regarded as increasing the stimulating value of the manure. Now it is on the rock, or rather the quicksand, of the profitable disposal of the *residua* of city life that most of the schemes for sewage disposal have hitherto foundered. The true chemical value of the contents of sewage is so low as hardly ever, if at all, to be worth the cost of extraction. And the other materials, put in as precipitants, or added to "fortify" the manure, can usually be applied much better in their natural state to agriculture than as constituents of the heavy and unmanageable sludge. As far then as precipitation of organic matter takes the place of destruction, and as the addition of lime to the heavy chemical charge of the chalybeate water is required, the results which may be expected from the Buxton process by no means come up to what we think may yet be secured from the brilliant discovery of Dr. Thresh.

The works recently opened have been constructed by Mr. Joseph Hague, A.M. Inst. C.E., the Town Surveyor of Buxton. The chalybeate water is conveyed by gravitation through earthenware tubes, with joints of jute, spun yarn, and cement, from a disused colliery at the foot of the Axe Edge Hills for a distance of over two miles. It then enters a tank at the rear of the liming-rooms, adjoining the works, which are situated between the river Wye and the Midland Railway, in Ashwood Dale. A series of flushing-chambers, supplied with penstocks, is introduced at suitable places along the route, with a view to supplying the carts for street watering.

The liming and mixing rooms are erected over the River Wye, on a semi-circular stone arch, the liming-room floor being on a level with the adjoining highway, and connected with a siding on the Midland Railway by a tramway. One of Messrs. Bowes Scott & Read's liming machines supplies a cistern of 800 gallons capacity, which is provided with an agitating apparatus. The machinery is driven by an over-shot water-wheel, 16 ft. in diameter and 3 ft. wide, driven by water derived from the River Wye.

Outside the liming and machinery rooms are dnplicate brick tanks, into which the main outfall-sewer discharges. The tanks are furnished with wrought-iron screening-wagons, for the purpose of abstracting the solid and floating matter, which is estimated at 75 per cent. of the whole sediment. After passing through the screening-wagons the sewage runs through a brick conduit into a circular water chamber, furnished with horizontal paddles, where the iron, lime, and sewage, are thoroughly mixed; thence the mixture flows to the settling-tanks, the series of which is 266 ft. long by 73 ft. wide, built of brick in cement, with concrete bottoms. The bottom of each tank is an inclined plane, 3 ft. 6 in. lower at the entrance than at the exit end, an arrangement that has been found fully adequate to retain the deposited sludge. After passing through the tanks the effluent water finally escapes over a weir, and so into the river. It is stated that the cost of the erection and maintenance of the works will be covered by a rate of 1¼d. in the pound.

The interest locally taken in this undertaking is very great, and the good example set by the Local Board of Buxton in visiting the sites of the various works suggested to them for imitation cannot be too well known. The plan may prove, however, to have much more than a local interest. Chalybeate water is of rare occurrence, and it is possible that the exact conditions utilised by the skill of Dr. Thresh and Mr. Hague may be unique. But the attention that these works will cause to be given to the use of iron as a purifier has a wider scope.

NOTES.

THE appointment of a Parliamentary Committee to consider the subject of Irish industries is, so far, an encouraging sign, inasmuch as it shows that other ideas beyond those of rebellion and disloyalty are being allowed to creep in, and that the industrial resources of Ireland, hitherto most unaccountably neglected in official quarters, may have a chance of being properly inquired into. Some two years ago a good deal of attention was devoted to them by the Statistical Society and the press generally, but the hopelessness of restoring lost confidence and attracting capital rendered all proposals abortive until the dangers of the situation should be abated and the country be again in a condition to be regarded as having a *mens sana in corpore sano*. Few would pretend that, under the existing political difficulties, this millennium has yet arrived; but nowadays we are thankful for small mercies, and are, therefore, disposed to view the present move with some degree of sanguineness. Ireland possesses extensive coal and iron fields, with other mineral wealth of more or less value, but mining industries have never flourished, although history attests that it once had a fairly prosperous iron trade. The woollen trade was unmistakably brisk, but was killed by English jealousy and injustice; and the linen trade, originally introduced by the Huguenot refugees, is the only manufacturing industry on a large scale that remains. Even under this head the cultivation of flax is diminishing annually, although there is no reason why its growth should not be an agricultural feature of Wicklow, Cork, Kerry, and Connaught, just as it now is of the counties of Ulster. The directions in which Irish industry should be encouraged are those of *la petite industrie*, which does not involve a large capital, but rather a patient and judicious endeavour to adapt the occupation to the character of the soil and the population. Adverse circumstances have contributed to make the Irish peasantry unreliable, unadaptive, and difficult to move out of the beaten track, but that this is not their real nature, is evident from the readiness with which they become skilful artisans when away from home. The question of Irish fisheries is one of immense importance, and, if they were properly developed, employment could be found for the whole of the South and West, to the enormous benefit of English fish-consumers; and, besides this, the materials for a vast canned food trade, second only to that of the United States, are all there, only awaiting a reasonable amount of energy and organisation. Were this industry set on foot, the other great desideratum of Ireland, viz., cheap railway communications, would soon follow, bringing many other industries in their wake.

MR. EDWIN CHADWICK has just published a somewhat incisive pamphlet styled "Commentaries on the Report of the Royal Commission on Metropolitan Sewage Discharge, and on the Combined and Separate Systems of Town Drainage." Mr. Chadwick contends that, instead of employing remedies to diminish the noxious results of discharging putrid sewage into the Thames at the outfall, measures should be taken at the point of discharge from the houses themselves to secure the removal of sewage while it is fresh, and before it has commenced to decompose, as therein lies its commercial value to the soil, a value which, he maintains, notwithstanding all assertion to the contrary by specialists, to be manifold more than the cost of its removal and application. He likewise denounces the plan of conveying the whole volume to a single outlet, and asserts that the scheme for radiating sewers in several chief directions, as has been adopted for the city of Berlin, could even now be carried out for London at far less expense than the estimated cost for remedying the

existing faulty arrangements. Mr. Chadwick runs a tilt also against the water supply, which he asserts is in amount more than double what it need be, and consequently greatly aggravates the evils inherent in the combined system. Its effect on the sewerage of the metropolis may be admitted, but though there is doubtless considerable waste in the method of distributing the water supply, yet that there is or can be a superabundance of water, or that the sources of supply should be drawn solely from subterranean reservoirs, are points certainly not yet established.

THE assent of the Committee of the House of Lords to the Manchester Ship Canal Bill has of course been received with the utmost satisfaction in Manchester, and admiration is at least due to the steadfast resolution with which the Chairman of the Provisional Committee and his supporters have devoted time, money, and high ability to support a fight in which they have been twice defeated. But the one fact given in evidence by the late Mr. Spence, that cotton could be sent to and fro between Liverpool and Manchester cheaper by road than by railway, is enough to explain the anxiety with which Manchester has watched the progress of the Bill. The possible effect of the work, even in the form now proposed, upon the scour of the Mersey *embouchure*, is, however, a matter to be very carefully considered.

WE are obliged to the *Saturday Review* for the light which it has thrown upon the spirit in which the Committee for the "Restoration" of Westminster Hall has been carrying on its proceedings. As the solution proposed by Mr. Pearson was also the one favoured by the Chairman of the Committee, we are informed that "the Committee resolved itself into a pleasant family party for editing his Report." This state of things is exactly what we hinted at some time since. The Committee was formed not to examine the question on architectural grounds, but to assist Mr. Shaw Lefevre in carrying out his own ideas. The *Saturday Review* repeats the unwarrantable assumption of the Report of the Committee, that the opposition to its scheme was entirely on the part of a set of people representing a "distinct school of archæological opinion," viz., the "Society for the Protection of Ancient Buildings." The Committee chose to summon some members of this Society, but the statement that the opposition proceeds from them only is a quiet assumption on the part of the members of the Committee, entirely contrary to fact. It is a curious coincidence that the main supporters of the scheme in the press are the *Times* and the *Saturday Review*, the proprietors of both which journals are members of the majority on the Committee.

THE two cases of Dunston and of Seely *v.* Neal, which were actions heard together last week, and which were brought by a tenant and a landlord of property at Streatham, against the owner of a brickfield, will cause satisfaction to many householders, for Mr. Justice Cave granted an injunction to restrain the burning of bricks in such a way as to interfere with the comfort of the plaintiffs. The Streatham brickfield is not the only one which causes much discomfort to many people, and it is not improbable that householders will take heart from this case, and endeavour to restrain the operation of other brickfields. We much regret to perceive that the judge reflected strongly on the conduct of the sanitary inspectors of the Wandsworth Local Board, because it shows that Acts of Parliament are useless unless those who administer them can be depended upon to perform their work in a thorough manner. "The officers of the Local Board of Health impressed him," said the judge, "very unfavourably by the way they gave their evidence. The nuisance arising from the burning of soft core had been going on for four years, and so had the nuisance from the heap of house refuse; yet the local inspectors had found out nothing about it. This consideration materially affected the credibility of their evidence, especially when he remembered that Bartholomew and Finister, two of those witnesses, the latter the inspector of nuisances, gave their evidence with a strong bias in favour of the defendants." In brief, the judge found that these officials had, in the first place, neglected their duty, and in the second, instead of maintaining a proper impartiality, had actually sided with the person who had committed the nuisance. In view of certain portions of the recently-published report of the Royal Commission on the Housing of the Poor, this portion of this recent case is noteworthy. Everything points to the immediate necessity of looking after our sanitary guardians very sharply indeed.

IT has been decided to hold a Great National German Exhibition of Industry and Art at Berlin in the year 1888. Among the guarantors are the Council of Merchants, who have voted 100,000 marks, and the Berlin Town Council, who have granted an equal sum towards the preliminary expenses, and to make up any eventual deficit. It is intended to ask both the Reichstag and the Prussian Parliament to contribute separate grants to the guarantee fund. It was at first resolved that there should be no foreign exhibitors, but the propriety of inviting Austria-Hungary, as the close ally of Germany, to participate in the exhibition has been mooted, and finds many supporters. The site selected for the exhibition is the charming park of Treptow, one of the suburbs of Berlin.

PROFESSOR KERR seems to have amused the last Annual Meeting of the Institute, as reported in the Transactions, with some useful if not agreeable truths. He makes out that each meeting costs 212*l.*, and wanted to know (troublesome people these who "want to know") what we got for it. He can remember the time when the Institute defeated a Government in the House of Commons (in regard to the Exhibition Building of 1862); he says we cannot do that now. He remembers when Lord Palmerston called the Institute in to strengthen his hands to carry a point in the House of Commons, and carried it. "No Prime Minister sends for us now!" he remarks. We may suggest that the fault, perhaps, lies partly with the House of Commons. There is an old Greek story of a philosopher who was asked by a king why philosophers were always found coming to see the kings, and the kings never came to see the philosophers. He replied that philosophers knew what was good for them, and kings did not. The House of Commons, perhaps, does not not know what is good for it, and follows the lead of self-appointed amateur architectural critics. But part of the result is also due not to the Institute, but to those who stand apart from it and do not strengthen its hands as they might and should. Then they complain that the Institute does nothing for the profession. Why do not they come forward and set a practical example?

SINCE the year 1867 there has existed in Heidelberg a society for the protection, and, when necessary, restoration, of the castle. This year the society takes a new departure, it issues the first number of a series of "Mittheilungen,' which are to appear at irregular intervals, and which will deal with the history of the building. The object of the publication is a laudable one, *i.e.*, to ensure that any work undertaken in restoring the castle should be based on a thorough acquaintance with every detail of its past. Such names as those of Professor F. Von Duhn, professor of archæology in Heidelberg, and Dr. Woermann, director of the Dresden Gallery, are sufficient guarantee of the character of the work done. The society has its members in Italy and even America. At present England is represented honourably, but singly, by Prince Albert Victor; his example should be followed by all lovers of Renaissance architecture. The subscription is only three marks yearly. Probably life membership at fifty marks will commend itself in England.

A PARIS correspondent writes:—"The situation of the architects of departments, towns, and communes is threatened throughout France; not only do the frequent political changes in the offices of prefects and mayors render the position of the architect very precarious, but now an administrative measure is threatened which will strike a fatal blow at the profession. The 'Conseils Généraux,' as regards the departments, and the 'Conseils Municipaux,' as regards the towns and communes, are more and more disposed to mix up works of architecture, properly so called, with those of roads, sewers, &c., and are anxious that the Civil and Government engineers and road agents should be entrusted with the direction of architectural works. The question will no doubt be brought before the thirteenth session of the Annual Congress of Architects in June next."

THE Scottish National Portrait Gallery is now an established institution of the country, although, in the meantime, the nucleus of the collection is only accommodated in a temporary brick building. This erection (which was opened to the public on Saturday, the 9th inst.), occupies the extreme eastern portion of the ground required for the permanent gallery, and consists of a single room 60 ft. by 20 ft., lined with timber, which is stained a dark brown, lighted from the roof, and warmed by hot-water pipes supplied from a furnace outside. The collection comprises 113 works, most of which are of great historical interest and artistic value, and which were included in the large collection exhibited last year in the rooms of the Royal Scottish Academy. The Scottish National Portrait Gallery originated in the offer of 10,000*l.* from an anonymous gentleman upon condition that a like sum should be provided by the Treasury. That sum was voted by Parliament. The same gentleman thereafter offered a further sum of 20,000*l.* for the purpose of erecting a building to accommodate the Portrait Gallery and the Museum of Antiquities upon condition that a suitable and isolated site should be provided. The present site, at the south-east end of Queen-street, was accordingly purchased at a cost of 7,500*l.*, of which 5,000*l.* was voted by Parliament, the remaining 2,500*l.* being provided by the Scottish Board of Manufactures from their own funds. The site secured has a frontage of 260 ft. to Queen-street and a depth of 70 ft. The permanent building, the designs for which are in the hands of Dr. Rowand Anderson, will consist of a centre and wings, and be of three stories with a basement at the back; the ground and first floor will be lighted from the sides and the upper floor entirely from the roof. The style adopted is Gothic of the best period (thirteenth century), and the elevations bear the impress of that mastery of detail which characterises the works of the architect.

ON Friday, the 8th, took place in Paris the election of a President of the Association of Painters, Sculptors, and Architects, as successors to the late M. Sommerard. M. W. Bouguereau, the eminent painter and member of the Institut de France, has been elected by forty-nine votes, as against forty-two for his competitor, M. Roger-Ballu. The slight difference between the number of votes, M. Bouguereau having only just obtained the number necessary for election, in spite of the support given him by his colleagues of the Institute of France, and the number of votes obtained by his young competitor, indicate the tendency among the French artists at present to restrict the very dominant influence of the Institute.

A COMPETITION has been announced in which prizes will be given for the best designs for Irish lace, to be sent in to the honorary treasurer, Mr. Alan S. Cole, at the South Kensington Museum, on or before the 15th of July next. The several varieties of Irish lace-work are defined as follows:—(1) Flat needle-point lace; (2) raised ditto; (3) tape lace, with needlepoint fillings; (4) cut cambric, to imitate lace-work; (5) embroidery on net; (6), drawn linen embroidery; and (7) crochet. The prizes vary from 5*l.* to 15*s.*,

and the work premiated will become the property of the promoters of the fund. The useful caution is given that "a mere careful copy of a natural flower, leaf, or spray, or group, does not constitute a suitable ornament. The designer must give that ornamental character to subjects derived from the study of natural objects which is essential in the composition of patterns suitable for execution." At the time of the Irish Lace Exhibition at the Mansion House, we commented on the fine character of some of the work, and are glad to find that an effort is being made to further stimulate its development. The names of Lord Carlingford and Earl Spencer stand at the head of the list of promoters. Further particulars can be obtained from Mr. Alan S. Cole.

MR. CHAS. WALLIS has produced, for Messrs. Winsor & Newton, a small "Dictionary of Water-colour Technique," mainly intended for amateurs, and prefaced by a very useful series of preliminary "practical hints" on materials and manipulation. The dictionary portion we presume may be useful in furnishing starting-points and finger-posts for the guidance of those who are taking up the art, though probably Mr. Wallis will agree with us that recipes of this kind are not of much use except where there is very decided initial ability to turn them to account. The arrangement of every kind of subject in alphabetical order produces rather a singular combination. "Aërial tint" is followed by "Anchors and Chains," "Brook (see River)" by "Brown Madder"; "Mars Orange," "Meadows," and "Mist" follow in succession. Special colours and combinations are given for such things as "hedges" and "palings." May not hedges and palings be almost any colour, materially, in reference to conditions of light, general scale of the drawing, &c.? And can we really specify pigments for "cottage chimneys," "cottage roofs," "shadows on house" (on what kind of house?), and "stones"? The combinations may be labelled "David Cox," but the student will probably be rather disappointed if he hopes to catch Cox's mantle in that way. The intention is good, but there is something dangerously mechanical in the view of the subject that may be thus induced in the mind of the too confiding aspirant.

ARCHITECTURE AT THE ROYAL ACADEMY.*

MR. J. D. SEDDING'S work is often admirable and always interesting from its originality and freedom from the trammels of prejudice and mere tradition. His proposed new church in the diocese of Ely (1,753-66-67) is a very characteristic example of his manner. A curiously irregular site has provided scope for his ingenuity in planning, which he has exercised without stint. A nave, some 45 ft. wide, is separated from a wide north aisle by an intermediate narrow aisle or passage, which is carried quite round the church. The principal entrance to the church is by an internal western porch, carrying a gallery, but not designed to accommodate the organ, which is placed in a bay on the south side of the chancel. Flanking turrets give access to a gallery or triforium in the thickness of the east wall, the use of which is not clearly apparent. The eastern gable is surmounted by a "rood," and the conventional crosses on the other gables are omitted, although an indication of some irresolution on this point in the architect's mind is afforded by a pencilled cross which has been added to the finished drawing. The altar itself is raised upon twelve steps above the nave-floor level, and is separated from the east wall sufficiently to admit of the continuation of the narrow aisle or passage-way above referred to. Both the nave and aisle are covered by almost flat wooden ceilings with moulded ribs, but without any descending principals to mark the bays. The arches dividing the nave from the aisle are low and almost semi-circular, the central member of the piers being carried up and finished by pointed arches of high pitch, under which lofty side windows are placed, with niches on each side of them. A band of formal and uninteresting gablets runs along the sides of the nave just above the heads of the lower arches. The transverse section shows a suggestion for a large fresco of the Crucifixion in the east wall, which is traceried on the exterior, but unpierced by any windows. It is undoubtedly a clever, and, in many respects, thoughtful design; but the detail is not exceptionally good, and we are somewhat doubtful as to the general effect.

St. Saviour's Church (where?), by the same author (1,811), is a long church, without aisles, and the design includes an attached presbytery. It is marked by the originality evident in all this architect's work, who has, however, in this instance carried a daring eclecticism to the extent of adding a Queen Anne turned wooden balustrade to an otherwise vigorously Gothic building. Those who admire Mr. Sedding's work extremely,—and he has many admirers,—will scarcely follow him to this length, nor will they yield unreserved assent to the sprawling quasi-Flemish tracery which covers his blank eastern gable. An unusual, if not an unprecedented, feature in the design is a doorway for the clergy pierced in the eastern wall, immediately behind the principal altar. The whole can scarcely be considered as an artistic success, although the severest critic could not accuse it of being commonplace.

We cannot but regard as of doubtful propriety the proposed reredos for Canterbury Cathedral (1,761), exhibited by Mr. John O. Scott, the central portion of which is a solid mass of carved and gilded woodwork, carried to the height of the caps of the main arcade. The open portions of the screen which connects the centre with the piers on either side are as light as the centre is heavy. It would, we submit, be a mistake to block out the charming vista afforded by Becket's crown by any such erection as is here proposed, be it ever so beautiful in itself,—a character which, so far as this drawing enables us to judge, by no means belongs to it.

Mr. Blomfield sends a careful geometrical elevation of his proposed south transept front of Chester Cathedral (1,788), and Mr. Reginald T. Blomfield, in addition to his excellent sketch of a "Madonna" finial at Clermont Ferrand (1,788), to which we have before called attention, sends a drawing of the Interior of Beckley Church (1,744) as restored by him. It is evidently a conscientious restoration, conservative in spirit and honestly delineated.

In the same category, we place the little Church at Alfrick, Worcestershire (1,828-9), as restored by Mr. Aston Webb. The interior shows a wagon-roofed chancel displaying its section towards the nave, the western truss forming a kind of wooden chancel arch with agreeable effect, the space above the tie-beam being filled in with half-timbered work. The whole is plain to severity; an elegant Late Decorated chancel screen, with traceried panels, being nearly the only ornamental feature in this otherwise unadorned little church.

In the design (now abandoned) for the spire for Peterborough Cathedral (1,798, 1,806), Mr. Pearson is seen at his very best,—grave, academic, correct, singularly graceful in outline and in detail, it is an eminently satisfactory effort. The Norman stage is surmounted by Late Decorated work of severe and simple beauty. The spire is "broached" and set behind a battlemented parapet, the pinnacles at the angles of the tower being supplemented by a second series of higher elevation astride of the broach, repeating an arrangement seen in one of Mr. Pearson's earliest and best works, the beautiful church in Bessborough-gardens. If this tower had been executed as designed, Peterborough might have challenged comparison with the best of our English cathedral spires,—Norwich, Chichester, or perhaps even Salisbury.

The tower and spire designed by Mr. Belcher for the church in Gordon-square is Early English in character, with a dash of French feeling in the detail; the outline and proportions are graceful and well studied, and the whole is well shown in a vigorous brush drawing by a well-known artist, who appears to better advantage here than in a characteristic drawing in pen and ink, illustrative of a block of business premises by the same architect. The courageous boldness of the sky is simply amazing. "My young remembrance cannot parallel a fellow to it," and the courage of the designer who could endorse this very free translation of his design is not less remarkable.

A very business-like drawing, comprising a plan and three elevations of the church of St. Mary Madley (1,822), by Mr. F. R. Kempson, shows a restoration of an interesting church which has been accomplished apparently with both skill and judgment. We "desire better acquaintance" with drawings of this nature, which show clearly and without trick or *finesse* what has been done and how the architect has acquitted himself of his task. A drawing of the fabric in the condition in which it was placed in the architect's hands would usefully complete the record.

In connexion with this part of the subject we may note some excellent Renaissance glass by Messrs. Heaton & Butler (1,834), some very beautiful domestic glass by Mr. P. H. Newman (1,778), a window by Messrs. Ward & Hughes (1,782), and another by Mr. Dixon, which, beautifully designed and drawn, has, however, not a single speck of pure colour, which is, after all, the glory of stained glass. We must not omit to mention a charming and highly-finished study for wall decoration by Miss (?) Ella M. Bedford; and we may perhaps be allowed to wonder how 1754 contrived to find itself in such company.

The inscrutable decrees of Fate and hanging committees had almost cheated us of a sight of a beautiful drawing by Mr. Raffles Davison, showing the restored interior of St. Mark's, Worsley, by Mr. Knill Freeman (1,823), a most artistic rendering of excellent work, though, like Thackeray's Prince,—

> "Condemned to foot it in the dust
> While others to the saddle vaulted."

The present exhibition affords ample evidence that in the domain of ecclesiastical art there is not only abundance of skill, but steady progress, and that the nineteenth century will be able to show a more than creditable array of really beautiful churches.

THE INVENTIONS EXHIBITION.

MACHINE TOOLS.

ONE of the most interesting sections in the Exhibition is that devoted to machine-tools, and amongst the examples shown there are a good many novel features which really deserve to be classed as inventions in the present day. We will briefly notice some of the most important exhibits in this class, returning to a few of those more especially interesting to us for a more detailed notice at a future date.

Before proceeding to do this it may not be out of place to give a glance at the preface to this section, which appears in the official catalogue. The whole of the prefaces in the catalogue this year have been contributed by eminent authorities in their respective departments, and Mr. Trendell, the literary superintendent, has been especially fortunate in securing Professor W. C. Unwin for the group now under consideration. We have, in the present day, become so much in the habit of looking on the simpler machine-tools as the necessary adjuncts of civilisation that it will doubtless surprise many engineers to learn that the first planing-machine was introduced only sixty-six years ago, and the first slotting-machine nine years later still. The origin of the lathe is, we believe, lost in the mists of antiquity, but a modern machine lathe is so different a tool to the old treadle lathe with its wooden bed that the one can hardly be identified with the other.

Professor Unwin divides metal-working tools into the following classes:—

1. Compressing machines, such as steam-hammers, power hammers, riveters, and forging presses.

2. Abrading machines, including grindstones, emery-wheels, polishing-machines, and the less perfectly-formed rose-cutters and milling-cutters.

3. Shearing-machines, such as ordinary plate-shears and punching-machines, in which the material gives way over a large area simultaneously in the plane in which the cutting edge produces a tangential stress.

4. Cutting-machines, in which a properly-formed cutting-tool removes the material stroke by stroke, or by a continual spiral cut over a surface of a required form.

The Exhibition is to illustrate the progress of invention since the date of the last great International Exhibition in London twenty-three years ago. Nearly all the machine-tools at

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* See pp. 607, 650, *ante*.

present in use were, as Professor Unwin points out, introduced before the commencement of this period; and, therefore, in order to be strictly within the scope of the Exhibition, whole machines can only be introduced incidentally, as it were, in order to illustrate improvement in detail. By these details, however, the vast strides made in the progress of engineering practice have been rendered possible, and the cheapness with which machinery of all kinds can be turned out in the present day may be almost wholly attributed to the advance in machine-tools, more especially labour-saving tools. As a general rule, the more simple a tool the greater is the skill required in its use. For instance, only long practice will enable a workman to handle a chisel or a file with facility, while mere boys are often seen in charge of the most complex machine-tools. This is well illustrated by the productions of some of the large engineering establishments now found in most manufacturing districts in Great Britain, in which we often find young lads, by the aid of some special tool, which is capable of producing only one particular article, doing work that would have required, a few years ago, the best attention of a highly-skilled workman. There is probably no better illustration of the value of special tools than is to be found at the Otto Gas Engine Works of Messrs. Crossley Bros., of Manchester, in which, by the adaptation of each machine-tool to only its own work, there is no possibility of anything but accuracy being reached, and much troublesome lining off, in which, with the greatest care, some error is likely to creep in, is avoided. Another instance we might quote is that of Messrs. Tangye Bros., of Soho, who by the use of copying-machines and special tools are able to turn out well-finished and accurate work, such as could only be obtained otherwise by the most highly-skilled and painstaking labour.

To return, however, to Professor Unwin's classification: amongst his first group reference is made to the early form of steam-hammer, in which the blow was entirely due to the weight of the descending tup; but steam is often admitted above the piston now instead of only on the return stroke. Ryder's forging-machine, in which a series of rapidly reciprocating hammers are driven by eccentrics, is referred to, and also the pneumatic hammer introduced by Messrs. Player Bros., of Birmingham, in which the tup cushions into an air-tight cylinder. Reference is also made to the drop-hammer, in which a weight or ram is lifted by being grasped by friction rollers. These release their hold at the necessary moment when the hammer falls by its own weight. Very heavy forgings, such as ships' anchors, are made with such a hammer as this. Another and simpler type of drop-hammer consists of a weight attached to the end of a belt placed over an overhead pulley. So long as the belt is loose, the pulley slips beneath it, but on the operator putting his weight on the other end, the weight is drawn up, and falls by its own gravity when the tension is released. Large numbers of the parts of small engines are forged in dies by means of this apparatus.

Among machines of abrasion the emery-wheels naturally occupy Professor Unwin's first attention. These, as is well known, are artificially made, and can be turned up true by a diamond tool. Dry grinding with the emery-wheel is much used now in place of the file for getting up bright work, but skill is required in the operation. The same may, of course, be said of filing, but there are lots of men who can use a file fairly well, while the same cannot be said of the emery-wheel, outside special work. The applications of the sand blast are also mentioned, the use of which appears to be mainly confined to sharpening files, but that there is a promising field for this invention there can be little doubt.

Amongst cutting-machine tools the improvements made within the last twenty-three years have been extremely numerous, the competition from the United States (in which American ingenuity enabled our Transatlantic cousins to attain success in spite of many disadvantages) having resulted in a great many new appliances, either borrowed or of native growth. Amongst these, capstan lathes, separate tool-holders, hollow mandril lathes, self-centering chucks, improved return motion for planing-machines, slot-drilling, and twist-drills, the latter with their special grinders, may be mentioned.

One of the most important changes within the last few years has been the more general introduction of milling cutters for general engineering work up to certain moderate sizes. We believe that the small-arms makers first used these tools on a large scale, and for such work as the actions of guns, in which a few parts have to be reproduced a vast number of times, milling machinery is especially well adapted. Milling is used for much larger work at the present time, Messrs. Smith & Coventry making a cutter to mill over a surface 3 in. wide. Much of the special work in Messrs. Tangye's well-known engines is done by milling cutters which will produce almost any contour, so long as there is no undercutting, the cutters being often built up of two or more parts.

The first exhibit in Group X., under which the machine-tools are classed, is that of Messrs. A. Ransome & Co., of Chelsea. Up to the present time full arrangements have not been made here, and all the tools are not in place, but judging from appearances there will be another machine cooperage such as attracted so much attention at the Fisheries Exhibition. In another part of the building this firm shows two examples of tree-felling machinery. These consist of a saw-blade attached to a piston-rod working direct from a steam cylinder. Probably connexion would be made to a portable boiler by means of a flexible pipe. The saw can be set to any angle. Close to Messrs. Ransome's stand some very interesting stone-working machinery is exhibited by Messrs. Brunton & Trier, of Westminster. The principal tool is a geared lathe, 12 in. centres, for turning granite columns. Two circular steel cutters work one on each side of the lathe bed, being carried by appropriately formed slide rests with automatic feed. The head stock in outward appearance is much like that of a metal turning-lathe of massive construction. For traversing a cutter-holder is used, taking a circular cutter, a special place being arranged in the tool-holder for the purpose. For granite and hard limestone steel cutters are used, but for gritstones, sandstones, and freestones chilled iron answers perfectly, the edge being as hard, or even harder, than steel. The steel cutters shown at the Exhibition, which were employed in turning up a granite post at the time of our visit, are conical in shape, but they are sometimes made in the form of flat discs. The cast-iron cutters are always conical, the advantage being that the edge is always on the chilled surface. Cutters are fixed on the chuck spindles by means of a split nut, and when properly set up never get loose while working. These lathes are made from 8 in. centres and 6 ft. long in the bed up to 20 in. centres, and 21 ft. long. They have usually double expanding beds for turning taper columns. It is said that an ordinary attendant will do as much work in one day with this tool as a skilled man will get through in a fortnight. There will be some other interesting stone-working machinery in this stand shortly, and we shall make further reference to it. Mr. H. R. Marsden, of Leeds, also shows stone-working machines, the principal amongst which is an improved form of his well-known stone-breaker and ore-crusher. In the older machine the power was conveyed through an eccentric motion, but this has been improved on by substituting a crank and adding a lever for working the jaws. This lengthens the bed somewhat, but the gain is no doubt very apparent in practical work. A modification has been also made in the movement of the jaws. The motion is first a striking one, followed by a rubbing or grinding action. This is obtained by an ingenious cam motion. A pulveriser, having a similar jaw-motion, is also shown. Another stone-breaking machine is shown by Mr. Robert Broadbent, in the same court. This is an improved form of Blake's stone-crusher, to which has been fitted a positive draw-back motion.

Messrs. Tangye Brothers, of Birmingham, show a novelty in machine tools in Robson's gas hammer, which has very much the appearance of small steam-hammer, but is somewhat different in the principle of its action. An inverted cylinder is carried by a cast-iron standard, and in this are two pistons, to the lower of which is attached a piston-rod, to which the top is hung. At the side of this cylinder are two powerful coiled springs, contained in a suitable casing. These are attached by means of a cross-head to the piston-rod, and, when neither in extension nor compression, hold the hammer at the upward limit of its stroke. The lower piston is then in the middle of the cylinder. The top piston reciprocates in the upper half of the cylinder, and then moves upwards, draws in a charge of gas, which occupies the space between the two pistons, the necessary air for the explosion being also admitted at the same time. At the proper interval, the gas is exploded, and drives the hammer downwards on to the work on the anvil. In order to set the machine in motion, a turn has to be given to the fly-wheel, and after this the work is performed automatically, the force of blow being regulated by means of a lever working in a cam, by which the supply of gas is regulated. The admission port is also actuated by a cam motion, whilst the exhaust port is opened and closed by a slide operated from a crank on the fly-wheel shaft. On the same stand are shown Robson's gas-engine and other examples of Messrs. Tangye's productions. Messrs. Samuel Worssam & Co., of King's-road, Chelsea, show an example of their four-cutter general joiner. This has been rendered more useful by an arrangement which allows of the bottom adze being detached and taken out, so that the joiner's bench can work separately from the moulding apparatus. In this way two men can, if necessary, work independently of each other, or the whole apparatus can be operated as one machine in the usual way. On this stand is shown a band-saw, in which the whole standard carrying both riggers can be shifted for angling. This excellent arrangement is planned so that at whatever angle the saw-band makes with the table it passes through the latter at the same spot, and the work, therefore, need not be shifted. This does away with a fruitful source of danger in band-saws where angling is required. The motion of the frame is obtained by a worm gearing into a toothed quadrant on the back of the casting. A self-acting saw-bench in which the feed may be obtained at will, either by vertical rollers or rope, is also shown by Messrs. Worssam & Co., on this stand.

There are two exhibits of pottery-ware machines shown in this section. The first of these is shown by Minton's, Limited, of Stoke-on-Trent; but as the arrangements are not yet complete, we will defer further mention of them for the present. Messrs. Thomas Willett & Co., of Burslem, are, however, in full operation on the next stand. They show a combination of what are known as a "jigger" and a "jolly." These are used for making ordinary crockery-ware coffee and tea cups, and work automatically, the operators merely having to supply the clay and remove the form. By this apparatus, which is also applied to the manufacture of saucers, basins, &c., vessels can be moulded accurately to size, and the thickness of material is absolutely uniform. The cup-making machine exhibited will turn out fourteen articles a minute, and does not require skilled attention. An automatic bat-making machine, shown by the same firm, is also an ingenious labour-saving tool.

A machine in this group already at work is a slotting and shaping machine, shown by Messrs. John Spencer & Co., of Keighley, Yorkshire. This is a convenient hand-power machine for cutting keyways in pullies or wheels of any kinds. The cutter is pushed through by a straight movement, communicated through a lever. The withdrawal of the cutting-tool from the work is effected by its own weight. When the motion is reversed in order to make the return stroke, the first action is to pull back a small wedge, and the cutter then falls. On again reversing, the wedge is automatically pushed forward, and so raises the cutter to the part to be operated on. The necessary taper is given to the keyway by means of a guide-plate fixed to the front of the machine, by which any angle may be arranged.

An apparatus that appears to attract a good deal of attention is the paper bag-making machine shown by Mr. F. D. Bumsted, of Hednesford. By this apparatus the whole of the operations necessary for making paper bags are carried out. It would be manifestly impossible to describe these without elaborate drawings, but the way in which the paper is converted into bags affords considerable amusement to the sightseers at the Exhibition. The special point about this machine is that it will make "square bottom bags," a refinement in bag-making which other less-gifted appliances are not capable of accomplishing.

Messrs. Sharp, Stewart, & Co., of Manchester, show a Sellars' patent planing-machine. In

this machine, the table is driven by a spiral pinion, keyed on a shaft running diagonally beneath the table, the pinion gearing into a rack placed also diagonally on the underside of the table. The motion is conveyed by a pair of bevel wheels. Since this arrangement was first introduced by this firm from the United States, they have made several improvements, especially in the reversing and quick return gear. A boiler drilling machine of a new type is also shown on the same stand. This will drill or rymer internally after the plates are in place, and either two drills, working opposite to each other, can be used at once, or one can be thrown out of gear and the other used. The feed is automatic. A neat model of a locomotive is shown on this stand, to which is fitted an arrangement for preventing oscillation upon going on to reverse curves. This, however, is outside the scope of our present notice. This stand is shared by Messrs. Sharp, Stewart, & Co., and Messrs. Anderson & Gallwey, of Chelsea, who show examples of machine riveters and other heavy hydraulic plant.

The two largest exhibits in metal-working machine-tools are contributed by Messrs. Greenwood & Batley, of Leeds, and Messrs. Hulse & Co., of Manchester. The former firm shows some very fine examples of milling-machines of highly ingenious construction, while Messrs. Hulse have novelties in planing and drilling machines, lathes, &c. We shall return to these again, together with other exhibits in this section, at a future date.

FURTHER NOTES ON ACADEMY PICTURES.

THE central work in Gallery I. is Mr. Britton Rivière's "Sheepstealers" (24), a man and dog preparing to capture one of a flock of sheep by moonlight. We say of this as of many other moonlight pictures, that so much detail and so much light are never really seen in moonlight,—in this part of the world, at least. The dog and sheep, of course, are all that can be wished; but the picture has been over-rated. Opposite to it Mr. Yeames makes rather a success with a large painting called "Prisoners of War: 1805" (67), two midshipmen under the charge of a stolid French sentinel; one of them a mere child, regarded with great sympathy by the French women among the spectators. The character of the two lads is very well contrasted. Mr. Frank Dicksee's "Chivalry" (53) is very fine in colour, utterly unreal in its personages; an eminently theatrical work. It is balanced by Mr. Hodgson's "Don Quixote and the Galley Slaves" (39): the Don hardly rises to the ideal of the character; the humour in the other characters is good and not exaggerated. Mr. Marcus Stone touches the well-worn chord of "The Gambler's Wife" (18) in a way not calculated to awake our sympathies; Mr. Marks gives us a pleasant bit of humour in "A Good Story" (30). A landscape by Mr. Oakes, "Cwm Eigian Moor" (61), and one by Mr. Peter Graham, "Evening" (73), are large and well-executed works, both partaking too strongly of mannerism to interest us. Mr. Orchardson's "Mrs. Ralli" (72) is a fine harmony of tones; Mr. Calderon's "Mrs. Harry Rouse" (19), a finely posed and spirited portrait, uninteresting in colour.

In the "Language of Flowers" in Gallery II. (141) Mr. Leslie gives us one of the most pleasing works in his own vein that we have seen; two girls form a group contrasted in style of beauty and tone of costume, harmonised beautifully in composition. There is a more thoughtful expression, more of feeling, in the work, than this painter has given us lately. The same room contains an example of Mr. Hook's river subject and sea subject, "The Stream" (140), and "After Dinner Rest awhile" (146), the quotation applying to certain be-glutted cormorants who serve to give a title to a sea-piece. But we make a run for a moment into Gallery III. to note that Mr. Hook's great success (which we certainly ought not to have omitted in our first notice) is "Yo, heave oh!" (270), a sea-piece on a breezy day, where a group of men and women are hauling a boat up the beach, and "the lightning of the noontide ocean" flashing beyond them to some purpose. The look, the very smell of salt water is in the picture; the artist has never done anything finer. Backing again into Gallery II., we note Mr. Dendy Sadler's clever work "The Salad" (136), the scope and humour of which are best indicated by the quotation appended: "Pour faire bien une salade il faut être trois personnes; une sage pour y mettre du sel, un avare pour y mettre du vinaigre, un prodigue pour y mettre de l'huile." Mr. Brown's "Our Playground" (92) is a study of London children on the Albert Embankment, very clever in character, a little weak in executive detail: its grey and brown tones form a good foil to Mr. Prinsep's "Afternoon Gossip on the Banks of the Ganges" (91), a hard piece of powerful colour. Mr. Herkomer's "Earl of Ducie" (119) is a fine portrait.

We shall be glad to offer a reasonable reward to any one who will tell us the meaning of Mr. Goodall's picture (165) of an infant sprawlng on his back, with a quotation from Farrar's "Life of Christ." The limelight is badly handled, for it falls on the floor round the child, and not his figure. But, on the whole, we give it up. Mr. Vicat Cole's "Sinodun Hill, Dorchester" (186), and Mr. Graham's stormy coast scene (190), are good examples of the art of the two painters, who produce effects, and fine ones, but do not take us to nature in her reality. Mr. Hook appears here with a fourth work of great power, "The Close of Day" (202), a golden sunset effect over sea, an impressive work, possibly a little exaggerated, the sunset laid on rather thick. Mr. Britton Rivière's "Væ Victis" (231), a combat *à l'outrance* between a wolf and an eagle, has a kind of screeching power about it; Mr. Marks's quiet and luminous painting (248), "A Treatise on Parrots," is in his best manner; Mr. Faed's "When the Children are asleep" (225) is a pleasing interior, with a firelight effect; Mr. Pettie's "Challenged" (239), where a young gallant has been roused from his bed to receive an apparently very unwelcome challenge from a booted and cloaked person, who is making his retreat, is a pointed and humorous variation of an old theme. Portraits are numerous in Gallery III., among which Mr. Watts's "Miss Laura Gurney" (201), with its rich mellow tone, is a pleasure to see; and Mr. Holl's "Earl of Dufferin" and "S. Weir Mitchell, esq., M.D." (211, 219) are masterly in character, expression, and broad, solid execution. A rather harshly-coloured and "loud" portrait, by Mr. Wells, of Mr. D. F. Carmichael (255), a late member of Council at Madras, has, nevertheless, a good deal of force and character. Among other portraits of note, besides those previously noticed, are Mr. Ouless's "Bishop of Worcester" (240), an embodiment of the "Church dignitary" type; Mr. Pettie's Mr. J. G. Orchar (185), a very forcible work; and Mr. Horsley's, the Academician, of his two daughters; and Mr. Sant's of a pretty little maiden, "Nesta" (179).

We have already mentioned the most noticeable works in Gallery IV.; but Mr. Herkomer's rather remarkable portrait of "Miss Katharine Grant" (360) claims a word. This is a portrait of a brunette dressed almost entirely in white, and against a nearly white background; it is a bold but an undeniably effective experiment. The attempt to portray the power of nature through the medium of allegorical figures is made by Mr. G. M'Culloch in "The Cloud" (372), and by Mr. H. J. Stock in "Night covering the Sleeping Earth" (373); the latter has something fine about it, but Night is coming down headlong in a way that disturbs the repose of the scene, and suggests the idea that he is shocked at the state of poor Earth and anxious to throw some respectable covering over her at once. Such works are praiseworthy as an attempt to escape from the ordinary boundaries of prosaic subjects; but there is always danger of their trenching on the ground of the ludicrous, which we fear this one does.

There is little, indeed, to give us pause in the waste places of Gallery V. Mr. Goodall's great canvas, "Gordon's Last Messenger" (432), is what we suppose is called "a picture for the times." For ourselves, it is little pleasure to see the tragic loss of that great man to the nation turned to the providing of subjects for theatrical and unreal painting. The most impressive work in this room is Mr. Miller's "Mehalah" (490), a fine painting of a very fine young woman in seafaring costume. Some of the things, *e.g.*, such as "Sweet and Twenty" (505), which might better have been called "The Ogress," make one wonder equally how any one could paint them and how any hanging committee could pass them; that is to say, we should wonder, if it were not for the pictures by an Academician in the same room, and they are, as Rosalind says, "out of all whooping."

The central place in Gallery VI. is occupied by Mr. Fildes's "Venetians" (559), a picture which would be striking if seen for the first time, but which is really only a rather inferior repetition of his painting of last year. Mr. Leader's "Hedgerow Elms and Hillocks green" (555) is a very pleasing landscape, though not marked by any power; Mr. J. Knight's "Solitude" (605) is one of the best of his dark-green or brown-green studies, which reproduce only one aspect of nature, but reproduce it with great power and fidelity. Mr. Benham's "Winds that are Wild, and Waters that are Free" (618) is a fine work, and there is a certain individuality about a small dark painting of "Tintagel" (607), by Mr. H. Welsh.

In Gallery VII. Mr. A. Gow has chosen a very fine and pathetic subject, "Absolution for the Lost at Sea" (656), where a Catholic bishop and acolytes, with mourners, are assembled on a bleak windy height outside a church, to go through the solemn form of benediction over those who are lost in the sea below. Superstitious as the subject is, there is a keen pathos about it which the painter has evidently felt and makes others feel. It is not too often that we can say this about Academy pictures, many of which seem to have no cause of existence, except that the painter wanted to show that he could paint this or that outer form or substance. Mr. MacWhirter's "The Track of a Hurricane" (662) in another way has also a definite motive, but strikes us as more ambitious than successful: we should be curious to know whether it was painted from any actual scene in the regions of hurricanes; the picture does not lead us to think so. Mr. Colin Hunter has made a great attempt to paint "The Rapids above the Falls of Niagara" (709), a large painting, in which the turmoil of the irregular heaps of water is well conveyed, but it is the movement, not the substance, of water; it is a material thicker and less translucent than water. Among other works in this gallery may be named "Sunday Morning" (672), by Mr. Arthur Hughes, a girl in a garden on the way to church, sending the dog back, the picture is filled with a wealth of blossoms somewhat too hardly painted; "Milton visited by Andrew Marvel" (663), by Mr. Boughton, who has reduced the Puritans to a very washed-out and weak-kneed set of people; "The Temple of Luxor" (680), by Mr. Frank Dillon; "Lake Leman" (682), by Mr. Inchbold; "A Harbour in the Channel Islands" (689), by Mr. W. M. Wyllie; "The Coming Race" (691), an admirable study of puppies, by Mr. W. Strutt; another clever dog picture, "How now! a Rat" (713), by Mr. Yates Carrington; and "In Disgrace" (717), by Miss Cornelissen.

In Gallery VIII. is a tremendous picture of a young Christian lowered into the arena after a fight with beasts, by Mr. Armitage (792), concerning which we cannot say much. It is altogether too big for our understanding. There is a very clever representation by Mr. Pettie of "Charles Surface selling the Pictures" (812). Mr. Pettie has got Charles and Careless to a T. They are the very men, and uncle Oliver is very good also. A little delicately-painted work by Mr. Percy Thomas, "The Old Sketch-book" (790), is well worth looking at by those who can appreciate its tender and regretful expression. It is a small painting, quite out of the line of the commonplace. How few of them there are, to be sure! "Honeymoon in Normandy" (780) is a clever work by Mr. Eyre Crowe, representing a young English couple tricycling through the street of a Norman town, to the respectful astonishment of the natives. As to Mr. Calderon's big wench, called "Morning" (774), supposed to be listening to the lark, unless he did it "for a lark" we cannot tell what he is at. Mr. Eyre Crowe's other work, "The Old Chantry at Auberville" (811), is a very interesting interior, with calm and placid sisters kneeling beneath their enormous caps. Mr. Herbert has actually done a landscape, "On the Llugwy" (797), and it is not by any means so astounding as his figure pictures.

Gallery No. IX., the old Water-colour room, is filled mostly with small cabinet works, among which is a superb little painting by Mr. Brett, "The Lighthouse on Cape Wrath: Daybreak" (844). The painter has got the look of early morning wonderfully; the cold, dark, inky-looking sea and the pale gleam of the lighthouse light in the morning seem almost real as we

look into the picture. In this gallery is also a fine and poetical work by Mr. R. Bottomley, "Death's Betrothed" (906), a dead girl in her bed, and a visionary figure of Death standing up behind. We have before noticed Mr. Bottomley as a painter who looks for subjects out of the beaten track, and treats them with pathos and originality. Mr. Pettie's "Sir Peter and Lady Teazle" is another highly-successful *School for Scandal* picture; and in the same room Mr. H. W. B. Davis exhibits a fine concentrated composition of landscape and sheep, under the title "Lost Sheep" (874).

In Gallery X. the battle pictures find place. These include Mr. Crofts's "William III. at the battle of Landen" (1,051), illustrating a descriptive passage from Tristram Shandy. This is not so complete a success as the painter's "Marlborough" some two or three years ago, but it somewhat recalls that, and is full of characteristic and spirited figures. Mr. C. E. Fripp's "Last Stand at Isandlhuna" (1,065) and Mr. Douglas Giles's "Battle of Tamai" (1,068) we can only name, but Mrs. Butler's "After the Battle" (1,081), the arrival of Lord Wolseley and Staff at the Bridge of Tel-el-Kebir, is a striking work, hard and raw in colour, as this brilliant lady's works are, but full of force and reality in the look and action of the men. Mr. J. D. Linton has a large picture of "The Marriage of the Duke of Albany" (1,028), painted for the Queen; even Mr. Linton has hardly been able to make these formally-arranged groups and strongly-coloured uniforms interesting, but it is, at least, less hard and conventional than paintings of this class usually are, and those who were responsible for the choice of an artist showed their judgment in inviting Mr. Linton. As to the public at the exhibition, they crowd and gape round this representation of royal personages from morning till night, to show their enthusiasm for art. In the same room are Mr. Herkomer's "Found" (1,027), a large "Landscape with Figures" (as the old catalogues would have put it) with nothing of special interest in it; Mr. Tom Lloyd's "Toilers of the Sea" (1,040), a good coast picture; Mr. MacWhirter's "Iona" (1,043) and "Corrie Burn" (1,088), the latter, to our thinking, his best picture of the year; Mr. Joseph Clark's "Home Again," the return of a sailor to his family (1,067), not equal to Mr. Clark at his best, but interesting in the figures and face of the children; and an effective portrait of Mr. Bret Harte (1,077), by Mr. Pettie.

In Gallery XI. are a couple of good landscapes by two of the more recent landscapists, —"The Slopes of Ben Nevis" (1,126), by Mr. Johnson, and "Last Leaves" (1,135), by Mr. David Murray, who, however, seems to have acquired a favour in the eyes of the Academy which we cannot quite see justified in his rather tame though refined works. Mr. Storey's picture of the "five maidens" who were supposed to have sat to Zeuxis for his "Helen" (1,149) is far superior to another on the same subject which was recently exhibited in London, but the subject seems a stumbling-block to artists, who are always at it, and never succeed in making anything very attractive out of it. There is beautiful painting in the work, but the five maidens are coquettish and rather vulgar, certainly not worthy to supply models for a Helen. Mr. W. H. Bartlett sends an interesting picture, the studio of a deceased sculptor, where the wife and daughter, in deep mourning, are exhibiting "His Last Work" (1,160) to visitors; the figures are sufficiently expressive, and the accessories, casts and marbles, &c., painted with much care. Mr. Herkomer's excellent portrait of "Sir Watkin Wynn" (1,155), with his kindly and thoroughly Welsh face, has a melancholy interest at this moment. Mr. Long exhibits a hard but in certain respects a refined portrait of Mrs. Chamberlain Starkie (1,147), what we should characterise as a very ladylike portrait, and the artist may fairly share the credit of that with the sitter. Mr. Seymour Lucas's "From the Field of Sedgmoor" (1,128) illustrates powerfully one of Macaulay's brilliant assumptions, — "The neighbouring villages long remembered with what a clatter of horse-hoofs and what a storm of curses the whirlwind of cavalry swept by." A fugitive with a scythe-blade weapon sits at the table with his head buried in his hands; the girl of the house listens with frightened face at the door: the picture is very real and effective.

We will say something of the sculpture separately.

LEASEHOLD TENURE IN LONDON.

ARCHITECTURAL ASSOCIATION.

THE last ordinary meeting of the Session was held on Friday, the 8th inst., Mr. Cole A. Adams, President, in the chair.

Mr. Wm. Fawcett, of Cambridge, Diocesan Surveyor, was elected a member by acclamation; and Messrs. E. Carter, Owen Fleming, and T. Henry were elected members by vote.

It was announced that the next visit would take place on the 16th inst., to Tilbury Docks and Hotel.

Votes of thanks in connexion with the late visit to the Church of St. Bartholomew the Great, Smithfield, were accorded to the Rector and to Mr. Aston Webb.

The Association Travelling Studentship, it was announced, had been awarded to Mr. Henry Denison Walton, and the second prize to Mr. Roland Wilmot Paul. The prize drawings were exhibited.

Mr. W. H. Atkin Berry (Hon. Sec.) then read the report of the Special Committee appointed last session to consider the whole system of education as carried on in the Architectural Association. This report will be discussed at a special meeting to be held on the 29th inst.

The Chairman stated that the lecturer for the evening, Mr. Ince, had been prevented preparing his paper, and that Mr. Percy Hunter had kindly taken his place at short notice.

Mr. Percy Hunter then read a paper entitled "Leasehold Tenure of Property: its Prejudicial Results to London, both Socially and Architecturally," of which the following is a summary:—

The author, in the course of his introductory remarks, observed that while his paper dealt only with London, many of the facts stated and the deductions drawn applied, though in a lesser degree, to the other large towns throughout the country. The leasehold system might be said to paralyse in Londoners all personal interest either in the localities in which they lived or in the houses which they occupied, and consequently it depressed, if it did not actually destroy, any active expression of that interest which should be shown in the promotion and execution of public works of local improvement, in the proper maintenance, structurally and decoratively, of private dwellings, or in the general architectural adornment of this vast and wealthy metropolis. The growth of London in population and area during the present century had been extraordinary, and probably unparalleled in any other city that ever existed. In 1801 the census returned 959,000 inhabitants, so that in the last eighty years the population has more than quadrupled itself. It now continued to increase at the rate of 70,000 per annum. These figures, extraordinary as they were in themselves, became even more interesting if at the same time the plans of the London of the past were compared with those of the London of to-day. Between 1560 and 1818, *i.e.*, in the long period of two centuries and a half, London only increased from two square miles in extent to six square miles. Between 1818 and 1834 it more than doubled itself in those sixteen years, and covered sixteen square miles. It was worthy of notice that up to 1834 the most outlying districts of the London of that day were within walking or easy driving distance of the business centres. The change, however, brought about by the development of the railway system between 1834 and 1881 was wonderful. In those forty-seven years the metropolis increased from an area of sixteen square miles to one of one hundred and seventeen square miles. If London continued to expand at the same rate, Stratford, Clapton, Highgate, Hampstead, Hammersmith, Putney, Balham, Blackheath, &c., will all be enclosed before the end of the century within bands of brickwork. When we find that nearly the whole of the property within the vast area of modern London is held upon short terms of leasehold tenure, we begin to realise the magnitude of the question of leasehold tenure. Lord Beaconsfield, speaking at an agricultural meeting a few years ago, stated that there were three values belonging to agricultural land,—firstly, the value of the ground-rent accruing to the freeholder; secondly, the value of the produce obtained from it by the farmer who put his capital into the cultivation of the land; and, thirdly, the value of the work of the labourer who had expended his labour upon the land, getting as an equivalent his daily wages. On the same principle Mr. Hunter defined three values in urban property. There was the ground-rent belonging to the freeholder; there was the rental-value obtained by the leaseholder in return for the capital laid out in erecting suitable buildings on the land; and there was the value of this improved property to the occupier or sub-lessee, depending in amount upon certain relative conditions of suitability of site, &c., for the purposes for which he occupied it, whether for residence or business. But in London, grouped as it is all round a narrow central area of daily business, a fixed and inelastic quantity like that of land becomes of enormous value, and, broadly speaking, this value is proportionately greater or smaller according to its proximity to or remoteness from this central area. This initial value of land, therefore, directly affects the other two values mentioned above, and the consequence is that they together become too great for one individual to possess. Mr. Hunter next proceeded to detail the relations subsisting between the freeholder, the leaseholder, and the occupier, pointing out that generally, — and almost invariably in Outer London, with whose progressive condition we could practically alone hope to deal,—the leaseholder is a builder,—a speculative builder. This is not necessarily a term of reproach, though many people seem to think it so. But it is in its bad influence on the speculative builder that the evil of the leasehold system first manifests itself. The lease granted being for any period less than one hundred years, there is no personal inducement held out to the leaseholder to lay out capital in the erection of buildings that will outlast that period, for any such outlay on his part will obviously be for the permanent improvement of the freehold, in which, however, he has not the slightest interest. Besides, his occupation is building, not house-owning; therefore he builds to sell, and his object is gained if he can build in such a way as to get the greatest possible return on the least possible outlay. This result is now attained more surely by "showy" appearance than by sound construction. The direct consequences are at once painfully obvious in the meagre appearance of modern houses built under this system, with their cheap and generally hideous embellishments of Bath stone or stucco window-bays, porticoes, string-courses, and cornices, repeated *ad nauseum*, and they become still more obvious in the course of time, as the original unstable construction gradually makes itself apparent. These results, however, do not declare themselves until after the original lessee, the builder, has sold the property, and transferred his energies to fresh woods and pastures new. To prevent a too serious and rapid depreciation of the reversionary value of the property, a compromise is, to a certain extent, arranged between the freeholder and the leaseholder at the commencement of operations, by means of the supervision of the freeholder's surveyor. But, in spite of this, the results cannot be said to be satisfactory to either of the parties, or to society as a whole. The freeholder does not get such sound buildings erected on his land as he would like to get; the lessee has to put more value into the property than he wishes to put there; and the public, who, as usual, have to pay for all this, do not get healthy houses to live in. The leaseholder, however, may, and often does, change his personality several times during an eighty or ninety years' lease. The original lessee, the builder, as we have seen, sells his interest as soon as he has established it on the basis he arranged in his calculations,—unless he has made a mistake in those calculations, in which case the property probably passes to his sub-partner, the mortgagee. In either case the leasehold interest is sold. But the direct interest of the lessee for the time being in the property is decreasing year by year as the term runs on; for about two-thirds of the lease the structural stability of the property is maintained by him, because that affects its marketable value; but after that period this value becomes so diminished that it ceases to operate as an inducement to maintain or repair, and he generally prefers to let the property at a reduced rental to a lower class of tenant to laying out a capital sum in the requisite repairs. Hence the growth of "rookeries." Such were some of the results of the leasehold system on individual properties. Its influence on localities was next discussed by Mr. Hunter, who pointed out that the freeholder, who surrenders, for a consideration, nearly all active interest in his

own property, does not as a rule concern himself in matters of general local importance. For the primary development of his land he may have formed the roads and laid the necessary sewers. But the annual rates for the maintenance of these, together with all rates and charges for paving, lighting, and maintaining the roads, all of which are of permanent value to his property, he devolves upon the leaseholder. Such matters of important local interest as the establishment of a free library, the erection of a town-hall or concert-room, or the formation of a public park, would all tend to the permanent improvement of property, but the freeholder's reversionary interest in it is, by the leasehold system, too remote to induce him to take any active share in promoting such works. If, however, in spite of this, they are carried out, he contributes nothing towards them. Now, the cost of all these works of local importance, whether of practical necessity or of general advantage, is defrayed by the local rates. These rates are levied upon all property, and that, by the leasehold system, means upon the leaseholder, who is regarded as *de facto* the "owner." But the lessee is the builder, who builds to sell. If, therefore, the rates were increased to meet the cost of these educational or æsthetic works (which *he* would certainly regard as superfluous), his financial calculations on his speculation would be upset, and he would therefore, in the Vestry, decidedly oppose their execution at the time when they could most economically and advantageously be carried out. When, at a later period, the neighbourhood has developed and settled down, the responsibility for the rates has devolved upon the occupiers. It might have been assumed that here, again, *they* would be personally and directly interested in the neighbourhood in which they reside, in its sanitary improvement and general healthiness, and in its architectural and horticultural adornment, all of which add to the enjoyment of the daily life. But the occupier's term being, as a rule, only a seven years' tenancy, *his* interest is too limited to induce him to promote works which will be a permanent improvement to property which is not his own, yet for which he will, as a ratepayer, be immediately pecuniarily liable. It is still less likely that he will concern himself much about his neighbourhood. Therefore, if he is on the Vestry, he opposes any increase in the rates, and if he is not on the Vestry he opposes everything by simple apathetic indifference. Moreover,—and here is one of the most curious and mischievous effects of the leasehold system,—the occupier is of a migratory disposition. Partly from these causes, and partly because of the restricted action and limited aims of local government, the occupier has no inducement to share actively in local government work. Mr. Hunter next proceeded to discuss the effect of the leasehold system on London, architecturally. He observed that the law and order which we boast of in our civil life is absolutely wanting in the architecture of the metropolis. But the worst influence of leasehold tenure is more evident in Outer London, and is of course contemporaneous with its recent great development, for it is worth bearing in mind that with the exception of the great Bedford, Westminster, and Portland estates, the present extensive system of leaseholds was not fully developed until the period between 1818 and 1834, and then with the growth of the metropolis the system gradually affected with ever-widening circles the architectural face of the whole of greater London, where local government, with its slow action and divided counsels, has been unable to provide that guiding hand which is manifest on the great ducal estates. Another reason is that the freeholder himself, in addition to being a less wealthy man, and holding, perhaps, only one or two acres instead of many, has, in the race for ground-rents, become, to a certain extent, speculative too. There is no use in vilifying the speculative builder. He is not really responsible for the sins he commits, nor has he been imposed by a wicked and tyrannical Government upon a helpless and down-trodden humanity; both he and his works are the natural offspring of the system of leasehold tenure of property. It was very difficult to suggest a remedy for the evils of the system, for just as surely as the existing condition of things has been the result of the development of one part of this economical question, so any alteration or reform that may be brought about must rather be through a correct appreciation of its evils by the general public than by any fanciful or arbitrary schemes of legislation on questions of property. It has been said that "we can command Nature only by obeying her laws," and we can only hope to permanently improve the conditions of urban life by a correct appreciation of all its circumstances, and eradicating those evils which have been developed. It has been proposed to give powers of compulsory purchase of the freehold to any leaseholder possessing an unexpired term of more than twenty years. There seems to be no logical reason for fixing on this arbitrary term of twenty years. If the principle is sound that any leaseholder should have the right to enfranchise the property which he holds if he is able and willing to do so, it must apply with even more force to a short term than a long one, as an insurance by the lessee against disturbance. Suppose, however, that by such fanciful legislation or a stroke of the pen we were able to enfranchise all leaseholds throughout London to-morrow, what would be the natural and inevitable consequence? We should simply find, the day after, that half the freeholders had realised the present value of their newly-acquired properties and had sold or mortgaged them for different terms of years at their market values. And chaos would have come again.

In the course of the discussion which followed,—

The Chairman remarked that this question would be considered to be one belonging more to the seniors in the upper room; but at the same time it was one which deserved the consideration of the juniors. The report of the Royal Commission, just issued, stated that the overcrowding in London was mainly due to the leasehold system. Perhaps some might take exception to Mr. Hunter's sweeping condemnation of London architecture. Many of the London streets,—the Strand to wit, with its variety of buildings,—had a remarkable picturesqueness of its own; and Ludgate-hill, and its approach to St. Paul's, had always struck him as being very fine, especially on a misty day.

Mr. H. G. Turner proposed a vote of thanks to Mr. Hunter, with whom he agreed that it was impossible to effect everything by legislation. The only possible way out of the difficulty was to improve public feeling, because really the public were much to blame in the matter. It was all very well to blame the system of leaseholds, and speculative building, but it was the public who made that, by being anxious to get a showy house at a much less price than such a house should be built for. Most of the houses built eighty years ago on the ducal estates were substantial, but nothing was spent on outside appearance.

Mr. Brodie remarked that if the paper proved anything, it proved that what was wanted was that buildings should be carried out by the large landowners. He seconded the vote of thanks.

Mr. Ellison thought that Mr. Hunter had been somewhat hard on the majority of the freeholders. A remedy might be found were the artistic as well as the constructive merits of the plan to be submitted.

Mr. Blagrove believed that Mr. Hunter had proved his case. At the same time it was difficult to suggest a remedy, though it would be a good thing if the public could be educated to understand the value of good building. It ought to be the duty of every one before taking a house to employ a qualified architect or surveyor to examine it.

Mr. F. W. Miller thought that many of the evils Mr. Hunter had put down to leasehold tenure were due as much to a vitiated public taste, and to the operation of the law of supply and demand. Nearly all existing public buildings in the metropolis were built on leasehold tenure, so that whether they were good or evil, the good was due to the leasehold system as well as the evil. Mr. Hunter seemed to bear in mind rather a cheap class of property; but some of the houses put up at Hampstead and South Kensington, under the leasehold system, would be an ornament to any country. It was idle to expect that every man who wanted a house would buy the ground, as Mr. Ruskin would have him do.

Mr. Hunter, in returning thanks, agreed that there were many picturesque parts in the architectural appearance of London, of which they had every reason to be proud. But considering the immense amount of capital spent, and the trouble taken, the results were far from being commensurate. His paper did refer a good deal to a small class of property, but this supported the truth of his argument; because it was in the larger residential parts, where the houses approached to something like an absolute ownership, that it was worth while to give some attention to architectural appearance.

Mr. J. A. Gotch proposed a vote of thanks to the retiring President, Mr. Cole A. Adams.

Mr. Stannus seconded the vote, which was very cordially received.

A vote of thanks was also passed to the retiring Secretary, Mr. Atkin Berry, and to the retiring committee.

The Scrutineers, Messrs. Fawcett and Fraser, then preseuted their report on the voting for the new Committee, with the following results:—President, C. R. Pink; Vice-Presidents, J. A. Gotch and W. H. Atkin Berry; Committee, C. A. Adams, W. J. N. Millard, J. Slater, B.A., L. A. Stokes, F. E. Eales, W. A. Pite, E. J. May, W. H. Bidlake, M.A., F. R. Farrow, A. Young; Treasurer, J. D. Mathews; Assistant Treasurer, H. W. Pratt; Librarian, R. L. Cox; Hon. Secs., H. D. Appleton and T. E. Pryce; Solicitor, Francis Truefitt; Assistant Librarians, W. Burrell and J. Shelley Birch.

Illustrations.

THE SOUTH TRANSEPT, CHESTER CATHEDRAL.

THE south transept of Chester Cathedral, built partly in the fourteenth and partly in the fifteenth century, appears never to have been entirely completed. Springers were prepared for the stone-groined ceilings of the central and side aisles, but the flying buttresses were left incomplete, and only one bay of groining at the south corner of the eastern aisle was finished.

For three centuries this transept was entirely cut off from the cathedral, and was known and used as the parish church of St. Oswald, the original church being pulled down to make room for it. The congregation is now provided for in the new Church of St. Thomas, the transept has been thrown open to the cathedral, and the much-needed work of reparation is by degrees being carried out.

The restoration of the exterior of the west and east sides with the flying buttresses was completed by Sir Gilbert Scott; since then a new roof has been put over the central aisle, and the groined ceiling of the eastern aisle has been finished.

It is now proposed to restore the south front to something like its original form. Old prints of the cathedral before the erection of the existing front, which (in the words of Sir Gilbert Scott) is "as mean a work as the present century has produced," are vague, and vary very much much, but all agree in representing it as elaborately and richly decorated with niches and sculpture.

The design for its reconstruction must therefore be, to a great extent conjectural, though fragments were fortunately left intact in one or two places sufficient to indicate what the details must have been. The great central window, which was destroyed when the present front was built, appears to have belonged to the later period of architecture seen in the transept (viz. Perpendicular), but no reliable record of its design is known to exist; it has been thought permissible to design the new window in harmony with those of the aisles which still remain.

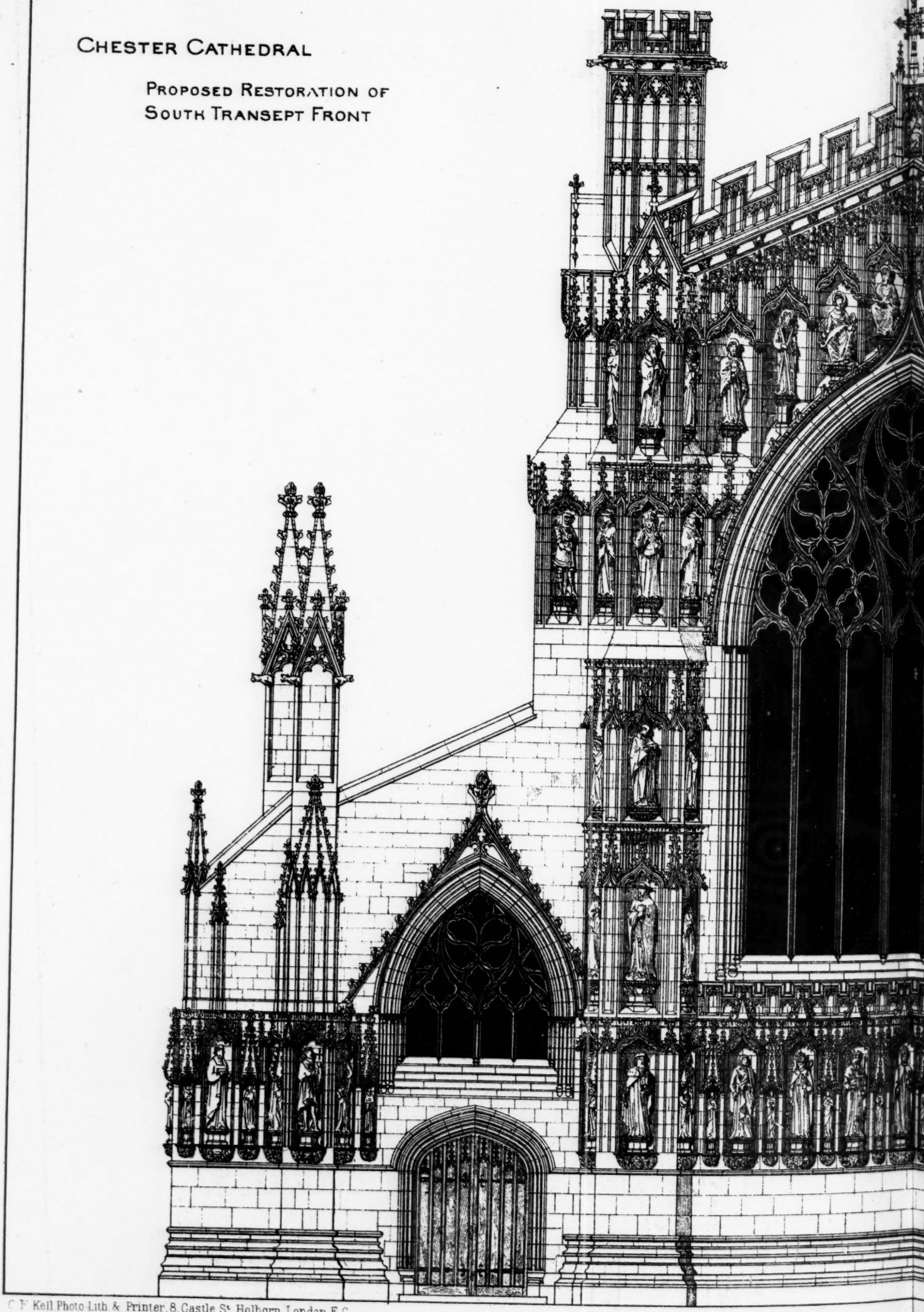
After the completion of this front, it is hoped that the remainder of the groined ceilings and the reparation of the interior may be taken in hand.

PUBLISHING OFFICES FOR MESSRS. SEELEY & CO., ESSEX-STREET, STRAND.

THIS building, designed partly as a warehouse and partly as offices, has been lately built by Messrs. J. & J. Greenwood. Mr. Henry Cowell Boyes is the architect. The two top floors are ware-rooms, and are of plainer design than the lower stories. It was originally intended to have three dormer gables at the top, one over each of the projecting bays, but difficulties of "light and air" intervened, and the two end

CHESTER CATHEDRAL

PROPOSED RESTORATION OF SOUTH TRANSEPT FRONT



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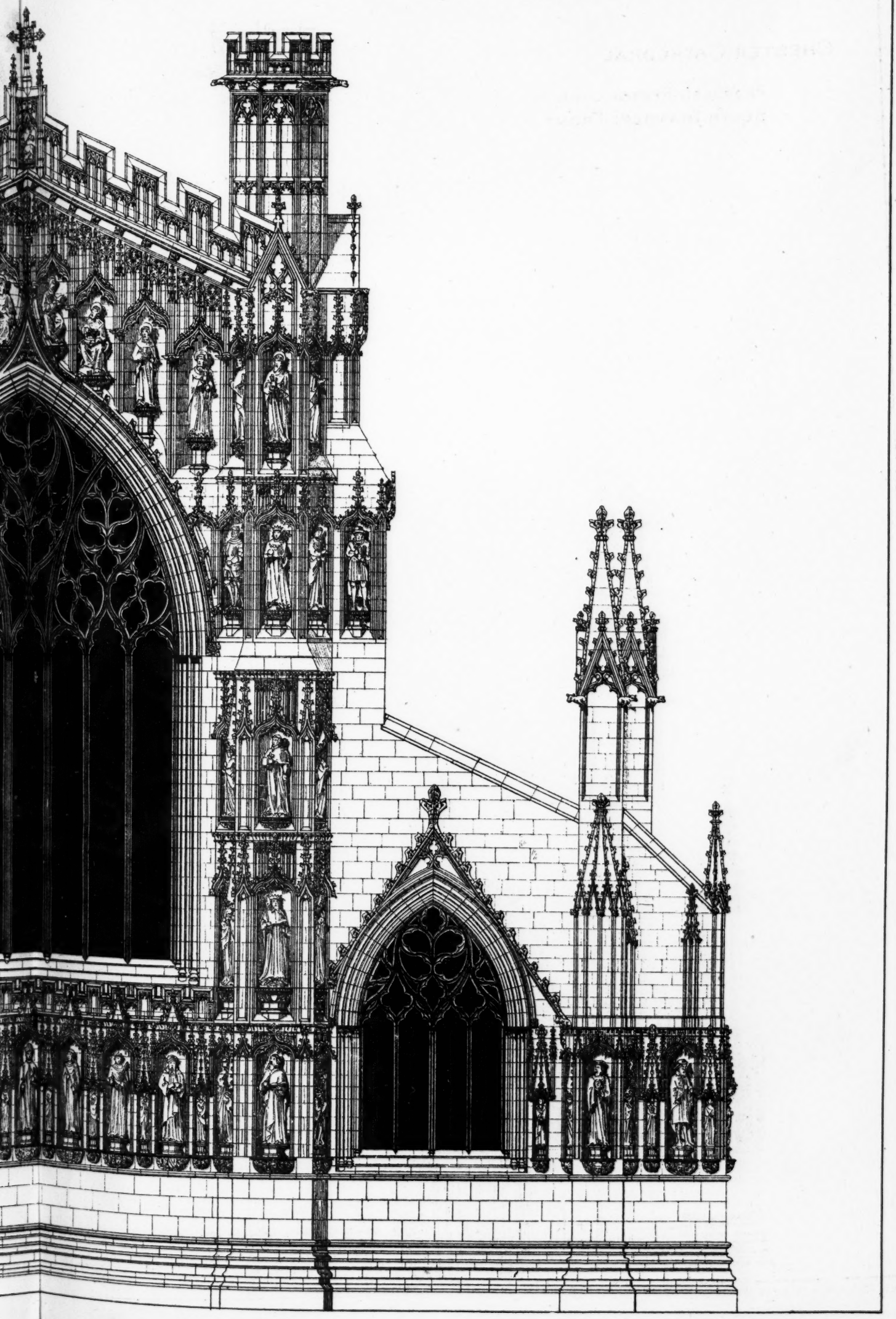


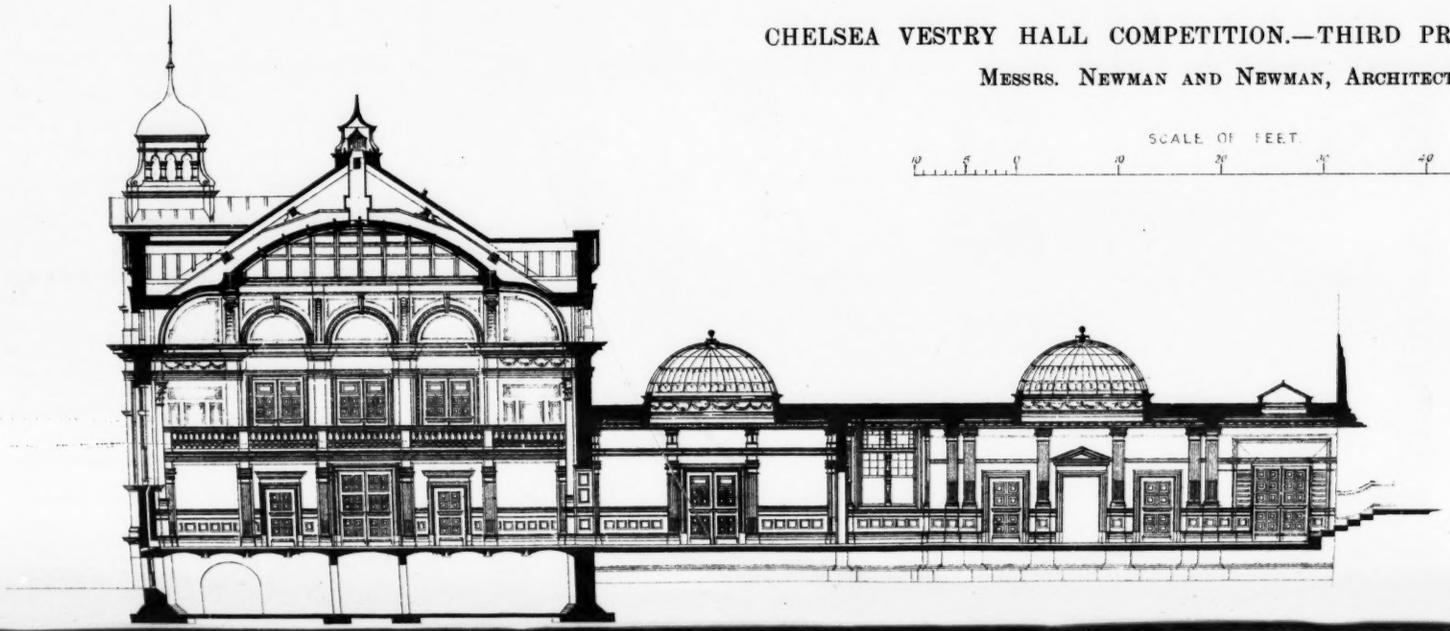
25 30 35 40 FEET

MR. A.W. BLOMFIELD
ARCHITECT

C.F.Kell, Photo-Litho. Castle St Holborn, London, E.C.

PENARTH CONSERVATIVE CLUB.

MESSRS. J. P. SEDDON AND J. COATES CARTER, ARCHITECTS.



CHELSEA VESTRY HALL COMPETITION.—THIRD PREMIATED DESIGN.

MESSRS. NEWMAN AND NEWMAN, ARCHITECTS.

SCALE OF FEET.

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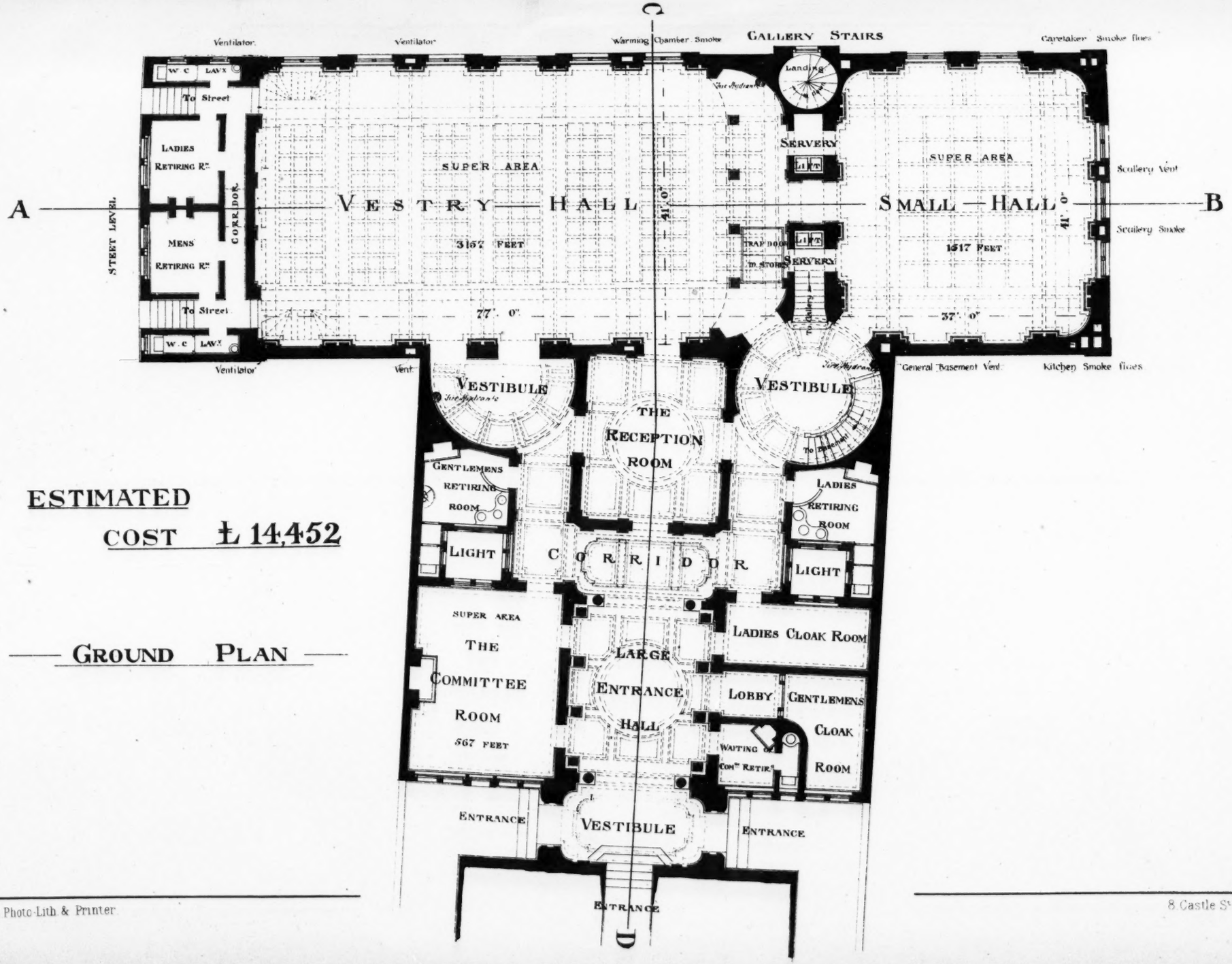

ESTIMATED COST £ 14,452

GROUND PLAN

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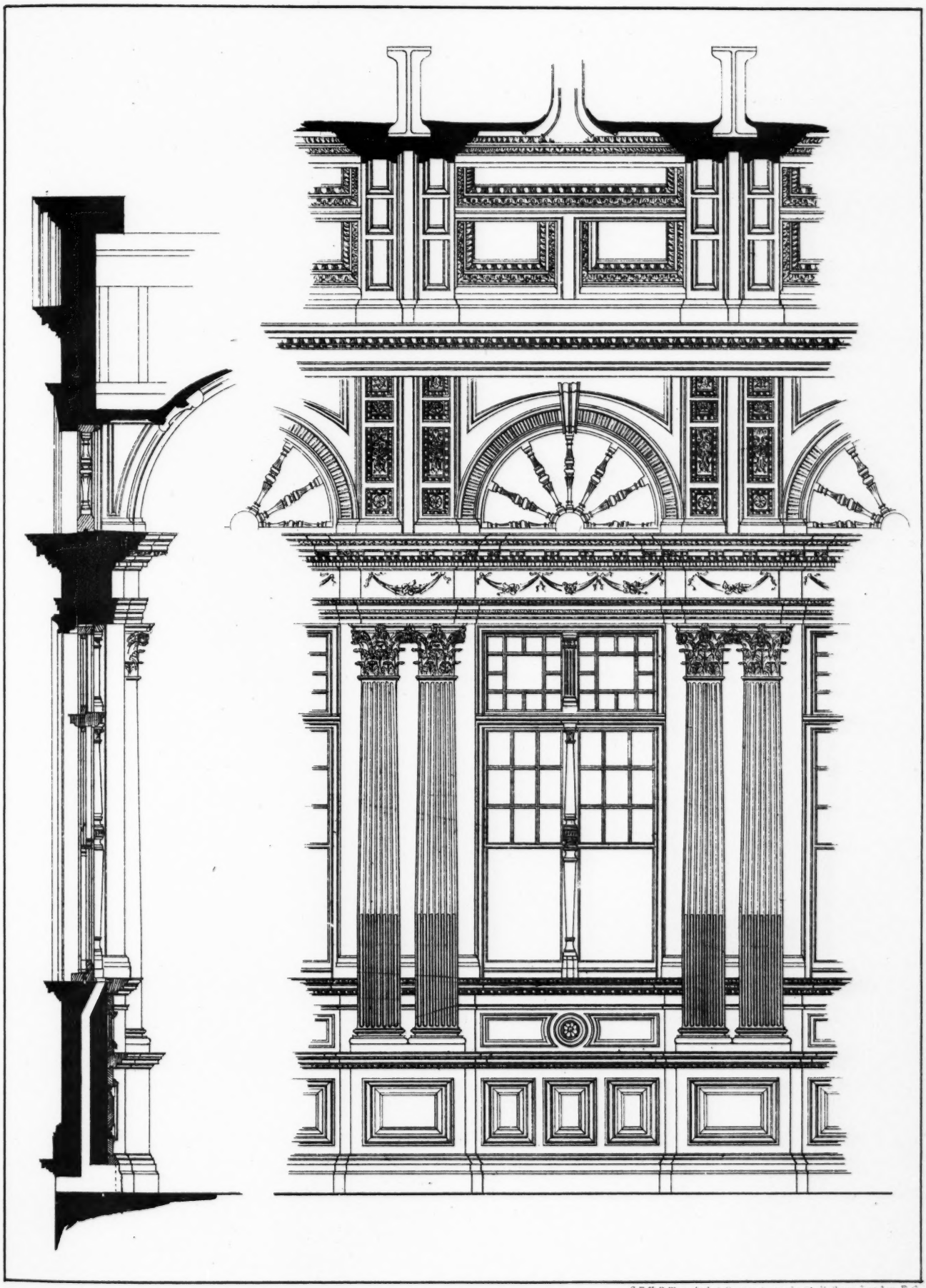

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CHELSEA VESTRY HALL COMPETITION.—THIRD PREMIATED DESIGN.

DETAIL OF HALL INTERIOR.

MESSRS. NEWMAN AND NEWMAN, ARCHITECTS.

Photoprint, Waterlow & Sons Limited, London.

NEW BUILDING FOR MESSRS. SEELEY & CO., ESSEX STREET, STRAND.

Mr. H. C. BOYES, F.R.I.B.A., Architect.

The Pugin Travelling Studentship Medal.

The Godwin Bursary Medal.

ones had to be abandoned. The materials used are Portland stone, red brick, and, in the panels of the first and second floors, plain red unglazed tiles in herring-bone patterns, affording a workable surface. In the ground-floor story a sufficient amount of light and air has been obtained without making the building appear to rest entirely on sheets of plate-glass. A special feature in connexion with the work is the carving of the panels, &c., in the projecting bays. This has been designed and carried out throughout by Mr. E. Roscoe Mullins, the well-known sculptor, who had free scope subject to such general control of style, scale, and subject as the architect considered necessary. Mr. Boyes desires us to state that the drawing, of which our illustration is a reproduction, was rejected at the Royal Academy Exhibition this year.

CHELSEA VESTRY HALL COMPETITION.

We give this week the third premiated design in this competition by Messrs. Newman & Newman. The following is the architects' statement of their views in regard to arrangement and design of the building:—

"In the existing buildings the corridors being very long, it was thought undesirable to continue them to any greater length in one direction, and it was partly upon this consideration and partly to secure good light other than top light to the committee and cloak rooms, and to place the reception-room in proximity to the two halls that the plan assumed the leading lines.

The conveniences are so arranged as not to interfere with the ingress of the people, and yet to be close at hand, but retired from the halls and reception-room.

The position of the committee-room was settled by the desire to have it near the present buildings, as it was thought that it would be used in conjunction with them, to keep it as far from the hall as possible on account of the noise, and to obtain direct light.

These considerations helped the working out of the main idea, viz., to have the two halls arranged *en suite* to present as large a front as possible to Manor-gardens for the improvement of that property.

The dimensions of the main hall are 77 ft. by 41 ft. and 32 ft. high. A gallery is formed over the serveries with two staircases, one communicating with the interior of the building and the other with the street. Accommodation is provided for 530 people in the large hall and 70 people in the gallery, or a total of 600 in all.

The halls are lighted from the side and ends, and separate exits provided into Manor-gardens, which also lead to the retiring-rooms.

On the west side of the Vestry-hall is the secondary hall. Its dimensions are 41 ft. by 37 ft. and 27 ft. high to the ceiling. The service-rooms adjoin and are arranged between the two halls.

Externally red bricks, with Portland stone dressings, cornices, &c., were proposed.

Internally, in the halls, committee and reception rooms, it was proposed to have wainscot dados and doors, and the walls above plastered and finished in colour, while the vestibules, corridors, and lobbies were to be finished with marble mosaic floors, marble dados and columns, and the plastering finished with colour decoration. The dome lights to vestibules were to have had artistic glass to suit the style and finishings."

If we remember rightly, the retiring-rooms at the end of the Vestry-hall were not shown in the plan as sent in, but have been added since, to supply what was an obvious deficiency in the original plan. The arrangement of the approaches to the hall for the public is, as we have before observed, very pleasing and effective.

CONSERVATIVE CLUB, CARDIFF.

This club-house is to be built for the Penarth Conservative Association by a limited company, promoted by the association. It will be called the Penarth Conservative Club. The architects are Messrs. John P. Seddon and J. Coates Carter (of Cardiff), with whom is associated Mr. S. H. Snell, of Penarth, the resident architect on Lord Windsor's estate. The drawing is by Mr. Carter.

The club consists of dining-room, bar, and committee-room on the ground-floor, and on the first floor of billiard-room and a room for public meetings, having a separate entrance from the road. This large room could be used for public dinners, &c., as it has a lift from the ground-floor near the kitchen. There is a large kitchen, besides the usual offices.

The walls are built of the local blue lias stone, faced externally with Penarth pressed red bricks, and the roof covered with Bridgwater tiles.

TWO OF THE INSTITUTE MEDALS.

We give here engravings, made by Mr. J. D. Cooper, of the Pugin and Godwin Medals of the Institute of Architects. The Pugin Travelling Studentship Medal has been established for a good many years, and is generally one of the best contested competitions at the Institute. The Godwin Bursary, originated and endowed by the late editor of the *Builder*, was established in 1881, and the Medal exhibits a portrait of the founder on the obverse. The Pugin Medal shows the Institute arms on one side and the Pugin arms on the other side. The special objects for which each was founded are well known to our readers. The Pugin Medal was modelled by Mr. J. Tayler Foot; the Godwin Medal by Mr. G. G. Adams, F.S.A.

THE CONGRESS OF FRENCH ARCHITECTS.

The Congress of French Architects, under the presidency of M. Questel, will be held at the École des Beaux Arts, from the 8th to the 13th of June (inclusive). We subjoin the full programme, in its original form:—

Lundi, 8 juin.

à 2 h.—Constitution du Bureau et ordre des travaux du Congrès.—Nomination des Commissions sur les questions suivantes: Concours publics, Honoraires, Hygiène, Propriété artistique, Responsabilité, Voirie, &c.—L'architecture au Salon, par M. Hardy, architecte.—Visite des ateliers de M. Chaix, imprimeur éditeur de la Société.

Mardi, 9 juin.

à 9 h.—Visite des fouilles archéologiques du Louvre, sous les salles des Cariatides, de la Vénus de Milo et de Melpomène, M. Guillaume, architecte.—Les monuments Sumériens du Louvre et les rois architectes de la primitive Chaldée. Conférence dans la galerie assyrienne, par

M. Ledrain, conservateur et professeur au Musée national du Louvre.

à 2 h.—Étude sur la céramique. par M. Deslignières, architecte.—A travers l'Espagne, conférence par M. Coquet, architecte à Lyon.

Mercredi, 10 juin.

à 9 h.—Visite des abattoirs de la Villette, feu Janvier, architecte.

à 2 h.—Le premier temple de Jérusalem, essai de restauration par M. G. Perrot, membre de l'Académie des Inscriptions et Belles-Lettres, directeur de l'École normale supérieure, et M. Chipiez, architecte.—Compte rendu du Congrès des Sociétés savantes, par M. Charles Lucas, architecte.—Études ou rapports des Commissions nommées le 8 juin.

Jeudi, 11 juin.

Excursion à Rouen, départ à 8 h. du matin, gare Saint-Lazare, retour à Paris, 11 h. 30 m. du soir.

Vendredi, 12 juin.

Matinée réservée à la Caisse de défense mutuelle.

à 2 h.—Études ou rapports des Commissions nommées le Lundi, 8 juin.

Samedi, 13 juin.

à 9 h.—Visite aux ateliers de faïencerie d'art de M. Lœbnitz.

à 1 h.—Distribution des médailles décernées par la Société Centrale des Architectes, à l'Architecture privée, à l'École des Beaux-Arts, aux Écoles d'Athènes et de Rome, aux Écoles privées, au Cercle des Maçons, au personnel du Bâtiment, aux Industries d'Art.—Notice sur la vie et les œuvres de M. Paul Abadie, membre de l'Institut, par M. Daumet, architecte.

à 7 h. très précises.—Dîner confraternel, à l'Hôtel Continental.

All inquiries should be addressed to the "Secrétaire du Congrès," at the offices of the "Société Centrale des Architectes," 168, Boulevard St. Germain, Paris.

COMPETITIONS.

St. George's Parish Church, Stalybridge.—The drawings submitted by Mr. John Lowe, architect, of Manchester, in competition for the proposed restorations at this church, have been awarded the first premium.

Co-operative Store, Chester-le-Street (County Durham).—The plans of Messrs. Sept. Oswald & Son, architects, of Newcastle-on-Tyne, have been selected in competition for extensive additions to the Co-operative Store at this place (including stabling, abattoir, &c.), and also for laying-out the adjoining land in sites for dwelling-houses.

Bexhill-on-Sea Drainage.—In reply to the invitation of the Local Board, some time back, nine sets of plans were sent in for the main drainage of Bexhill, by, amongst others, Messrs. Davison & Sons, Windsor; Mr. J. B. Watt, Walbrook, London; Messrs. Orchard & Van Putten, Lewisham; Messrs. Lailey & Reade, Westminster; Messrs. Francis & Robinson, Furnival's Inn; Mr. Cobbold, St. Albans; and Mr. Fowler, Manchester. On Tuesday last the Board selected the plans of Messrs. Nichols, Birmingham, as being the most economical, subject to modifications, and they decided to offer Mr. H. C. Roper, C.E., Dudley, 14*l.* for the retention of his plans, the Borough Surveyor of Hastings, in conjunction with the Board's Surveyor, having reported strongly in favour of the lines laid down on his scheme as being essential in several particulars. The unsuccessful plans are to be returned with thanks for the trouble taken. At present they are on view at the Surveyor's Office, Bexhill.

PUBLIC LATRINES.

THE Vestry of Paddington has just had presented to it the report of its Public Lavatory Committee, appointed on the 4th of March, in pursuance of a resolution by the Vestry affirming "that it is highly desirable that public lavatory accommodation (with water-closets, &c.), for both men and women, should be provided for the use of every part of the parish." By the terms of the "reference" the committee was "to consider and report as to whether this accommodation cannot be provided in such a way as to be a boon to the immediate vicinity in which it is placed, instead of being a nuisance, as must be the case, more or less, where structures for this purpose are erected in the centre of the public thoroughfare." The Committee, of which, Mr. Mark H. Judge was chairman, answered this question in the affirmative, and in their report they say,—

"Your committee is of opinion that the opposition usually made to the construction of urinals in new places is mainly due to the unsatisfactory structures which have hitherto been erected, and they venture to suggest that not only should better designed places be provided, but that, as far as possible, they should be in charge of an attendant. The construction of one or two public lavatories on some plan similar to that proposed for the junction of the Harrow and Edgware roads would, it is thought, prove so satisfactory that there would be no opposition to the construction of others in similar positions, so that the present common stall urinals erected in the public thoroughfares might, in time, all be removed. The cost of an attendant would in most cases be in large part met if complete lavatory accommodation were provided, as a small charge should be made for the use of the closets and the wash-basins. In such positions as at the junction of the Harrow and Edgware roads a considerable profit would be realised"

The committee recommend:—1. That an underground public lavatory for men be constructed at the junction of the Harrow and Edgware roads, in accordance with the plans presented to the committee by the chairman, Mr. Mark H. Judge, A.R.I.B.A.; and that the Surveyor to the Vestry be instructed to obtain estimates for the same for the consideration of the Vestry. 2. That the urinal in the Uxbridge-road be removed, and that a new underground public lavatory be constructed near this spot, directly opposite the Queen's-road; the lavatory to be in two parts, one for men and one for women; the plan to be somewhat similar to that proposed by Mr. Judge for the Harrow and Edgware roads. That advertisements be inserted in the architectural journals offering a premium of 10*l.* for the best design for the said public lavatory; the premium to be awarded by three members of the Royal Institute of British Architects, to be selected by the Vestry.

What may be done in this direction is shown by the underground urinals and water-closets (for men only) erected by the Commissioners of Sewers of the City of London beneath the ground at the base of the Wellington statue in front of the Royal Exchange. Of these conveniences an official description is before us, and we extract the following particulars. The underground construction is formed around the base of the Duke of Wellington's statue, on the western front of the Royal Exchange. It is wholly beneath the street-pavement, and was excavated in the mass of solid concrete which surrounded the foundations of the base of the statue. The base of the statue being oblong, with a railing round it, forming an ellipse, that form suggested itself as best suited to the requirements of the structure. The area may be said to be divided into three rings, the outer ring being occupied by the water-closets, the middle ring by the passage-way or corridor, and the inner ring, or that which is closest to the base of the statue, by the urinals. The outer ring contains twelve water-closets, six on each side, divided by brick partitions radiating from the centres of the ellipse; space is provided at the ends for four additional closets, should they be required, or the space may be otherwise utilised, as may be found necessary. The outer ring contains also two rooms for attendants, one on each side of the entrance, and together they command a view of the whole of the interior of the structure. The corridor or passage-way is 3 ft. 6 in. wide, and gives access to the water-closets on one side, and to the urinals on the other side, and passes completely round the ellipse, giving a clear passage-way from the entrance to the exit. The internal dimensions of the structure are as follow:—Length 38 ft. 4 in., breadth 33 ft. 8 in. The depth from the street paving level to the floor of the corridor is 10 ft. There is no external evidence of the structure other than the entrance-steps leading to it; the cast-iron railing which heretofore surrounded the base of the statue is retained in its original position, and the levels of the pavements are unaltered. The street pavement over and forming the roof of the structure is carried by three rows of cast-iron ornamental columns, which carry rolled iron joists filled in with breeze concrete, the whole being covered with asphalte. These columns at the same time form the points of sub-division of the urinals. The structure is lighted by prism pavement-lights let into cast-iron frames lying outside the curb of the railings surrounding the base of the statue, and forming also the footway pavement, and is ventilated by perforated iron panels and gratings laid at the pavement level. An elliptical grating forming the outer border ventilates the water-closets, and the gratings immediately at the base of the statue inside the railings surrounding it ventilates the urinals. Ventilation is also obtained to the water-closets by open fanlights over each of the doors to the same. The closet apparatus are of the best quality, the whole basin and trap being formed in one piece of white porcelain. The seats are constructed of hard light-coloured wood, polished and put together so as to be easily removed when necessary, the seats are hinged with brass hinges, and the risers made movable. The urinals in the inner ring are fourteen in number, and are formed with enamelled slate backs, sides, and divisions, and fitted with white porcelain lipped pans. The floor of the standing-place of each urinal is of slate, dished and covered with a brass grating, with a hinged gully and trap in the centre. The drains throughout the structure are to be inspected and kept clear by means of hinged inspection boxes, man-holes and covers, and have ventilating-pipes carried up the gas standards in the entrances. The floors throughout of the closets and the passage-ways are asphalted. The whole of the internal walls are faced with white glazed bricks with coloured borders and dado. The building is from the design of Lieut.-Colonel William Haywood, the Engineer and Surveyor to the Commissioners of City Sewers. The builder was Mr. Mark Gentry, contractor, and all the sanitary fittings were supplied by Mr. George Jennings, of Stangate. Adjoining Whitfield Chapel, in the Tottenham Court-road, is a urinal lately erected under the superintendence of Mr. William Booth Scott, the Chief Surveyor to the Vestry of St. Pancras, which possesses some good features. It is of enamelled slate, and takes the place of one of the old-fashioned iron kind. The structure has been erected for the Vestry by Mr. George Jennings.

THE SURVEYORS' INSTITUTION.

THE Council announce that the following candidates, whose names appear in alphabetical order, have passed the recent Professional Examinations of the Institution:—

For the Professional Associateship:—

Arthur Joseph Edwin Arch.	George Edward Hilliard.
John Arnott.	William Vincent Jull.
Cecil Cautley Baker.	George Arthur Lansdowne.
Edwin Thomas Beard.	Charles Ralph Maddox.
Harry Blundell.	Arthur John Martin.
Alfred Virgoe Buckland.	Frank Massie.
Herbert George Coales.	Sydney Perks.
Marcus E. Collins.	John Rand.
Alfred Eiloart.	John Moore Sturgess.
William Jacomb Gibbon.	John Henry Tiffen.
Robert Godfrey.	John Watson, jun.
Charles Henry Hebblethwaite.	George Arthur Williams.
	Sidney Williams.

For the Fellowship:—

Frank Arthur Bontor.	James Pain.
Thomas Arthur Dixon.	Philip Edward Pilditch.
Harold Edward Moore.	Henry John Treadwell.

DULWICH COLLEGE AND ITS FOUNDER.

MR. T. C. NOBLE, in a recent communication to *Notes and Queries*, says:—"In his carefully compiled 'Catalogue of the Manuscripts and Muniments of Alleyn's College of God's Gift at Dulwich,' 1881, p. xxiii, Mr. G. F. Warner, of the British Museum, gives a brief introductory account of the earliest purchases made by Edward Alleyn in the parish of Camberwell, and traces step by step the gradual acquisition of the large estate which was subsequently left for the support of that noble foundation Dulwich College. 'The precise date of Alleyn's first acquisition of property in the manor has hitherto been a matter of doubt;' but, adds Mr. Warner,—'It is now ascertained to have been October 1, 1605. This purchase, however, seems to have been merely a preliminary, in order to clear off a mortgage held by Sir Robert Lee since 1602, and it was followed, on the 3rd October, by articles of agreement on the part of Sir F. Calton for the sale of the manor itself and the whole of his estate, excepting the Camberwell advowson.

The articles of agreement of October 3, 1605, stated by Mr. Blanch in his 'Dulwich College and Edward Alleyn,' 1877, p. 59, to be 'the oldest document in Dulwich College respecting the purchase of the manor by Alleyn,' was stated by Mr. Warner, in his 'Catalogue,' 1881, to be missing. His precise words are, 'The original of this document has been lost.' Such being the case, it must have been lost between the year 1875, when it was in the custody of Dr. Carver, the master of the College, and, in fact, is stated by Mr. Blanch to be at that date *in* the College, and 1881, when Mr. Warner compiled the 'Catalogue.' These dates are important, because it is now my pleasure to say that this precious MS.

has recently been discovered—in fact, was offered for sale at the well-known auction-room of Messrs. Puttick & Simpson, in Leicester-square, on March 5, 1885, being described as—

"Lot 1,06⁾. Agreement for the leasing of lands in the Manor of Dulwich in the Countie of Surrey between Sir ffrancis Carlton, Knight, and Edward Alleyn. Dated 3rd October, 1605. 3 pp. folio. Signed by both parties."

It only realised at the auction the insignificant sum of 2*l.*, simply because many persons doubted its genuineness; and, if genuine, why was it there for sale? An explanation is certainly required; but it is to be hoped that by the time this note is printed the MS. has been deposited with the other papers at the College. If not, then immediate steps should be taken to secure it before it again becomes a loss.

When I printed my 'Ramble round the Crystal Palace,' in 1874, I had occasion to note down many curious hitherto unknown facts relating to the district. Among all the items there was one which I think is now worth reprinting, and is, perhaps, the funniest, and yet the most deplorable evidence we have of the way the English people sometimes venerate the memory of 'a worthy benefactor':—

"1867, March. Mr. Webb, of the Half-Moon Inn, Dulwich, presented the College with the original gravestone of Edward Alleyn, which for many years had been preserved by himself and father in the tea-gardens at the rear of the inn. I recollect seeing it there. It is now, I understand, 'buried' among other odds and ends in the college storehouse."

Where is it now, in 1885? The 'Manor House,' we know, was destroyed in 1880, and the site is now a building estate."

THE FURNITURE TRADES' EXHIBITION.

THE fifth annual Furniture Trades' Exhibition, which has been open at the Agricultural Hall, Islington, for the past fortnight, has been one of the dreariest of the many dreary exhibitions which have been held in that building during the last few years. The large amount of unoccupied space (notwithstanding the inclusion of several exhibits having nothing whatever to do with the avowed object of the Exhibition), the scarcity of visitors, and the generally forlorn appearance of the "show," go to convince us more strongly than ever that the mania for yearly exhibitions in particular groups of trades has almost spent itself. As we believed from the first would be the case, it has been found impossible to maintain the interest of frequently-recurring exhibitions of identical character, for the intervals between them are too brief to allow of material advance or improvement, and it necessarily follows that in exhibition after exhibition the same things are shown, generally by the same exhibitors. Even in this "age of exhibitions" this sort of thing begins to pall after a time, and the present Furniture Trades' Exhibition at Islington affords evidence that the public and exhibitors alike are of this opinion, for the visitors are few in number, and there is a marked falling off in the roll of exhibitors. Nevertheless, there are a few good things to be seen in the Exhibition. Amongst these we may mention some chair-frames exhibited by Messrs. G. S. Lucraft & Son, of City-road, containing some excellent inlaid work in brass and tortoiseshell. The design of these inlaid panels is of a flowing Renaissance character, and the workmanship throughout is exceedingly good. Messrs. William Woollams & Co., of High-street, Marylebone, have a very good display of their well-known paperhangings, of good design, and free from arsenic; and they also exhibit specimens of a new material for wall-decoration named "Tergorine," which in texture and appearance is very similar to leather, and which is capable of treatment in any way in which real leather may be treated. The material is worth the attention of architects, and bids fair to become a serious rival to other materials now in the market. Messrs. Maw & Co., of Benthall Works, near Ironbridge, show a cabinet and dado illustrating the application of faïence as a material for inlaying furniture, panelling, &c. Mr. A. Putney, of Bridge-place, Harrow-road, shows his "Pavodilos" solid wood flooring, of which we have on a previous occasion spoken in terms of commendation. By its use architects may have e satisfaction of materially improving the aracter of the floors of the houses they ect without any very serious increase of cost. The poorness of the floors in the vast majority of modern houses in this country has on more than one occasion been referred to in the pages of the *Builder*, and we hope that the use of Mr. Putney's "Pavodilos" flooring will help to effect a very desirable improvement in this respect. In addition to its better appearance when compared with the ordinary nailed and too-often gaping floor-boards, a solid floor, such as Mr. Putney has brought forward, has important and obvious advantages from a sanitary point of view. Messrs. M. C. Duffy & Sons, of Bermondsey, show some very excellent work in the shape of turned balusters, newels, and table and chair-legs; also handrails, &c. Their "Board School Wood-block Flooring" is also well worth attention. Messrs. W. R. Crow & Sons, of Clerkenwell, have also a good display of the same class of goods. Messrs. F. Walton & Co., of Berners-street, have a stand showing the now well-known capabilities of "Lincrusta-Walton" as a decorative material. Messrs. Henry Bassant & Son, of the West London Parquet Works, exhibit some good specimens of parquet floors. The miscellaneous exhibits include Mr. Renton Gibbs's admirable heating apparatus for buildings; Messrs. C. Kite & Company's excellent ventilators; the "Glacier" window decoration, exhibited by Messrs. Perry & Co. as a cheap substitute for stained glass; cement for mending broken glass and china; Ridge's food for infants; and some other things whose claim to be admitted to a "furniture trades' exhibition" has apparently been that they were wanted to help to cover the vacant floor-space.

THE EASTERN PEDIMENT OF THE PARTHENON.

SIR,—It is evident that the writer of the article * criticising my paper on the Eastern Pediment of the Parthenon, in the April number of the *Nineteenth Century*, has to some extent misunderstood the nature of my work and the character and intention of my paper. Perhaps some remarks on pp. 664 and 669 of my article ought to have led your critic to consider it more than possible that, "for anything we know, Dr. Waldstein may have such instances *in petto*." But I can quite see that the writer was not obliged to wait with some patience, and assume the presence of such arguments. On p. 669 of my article I refer to the necessary limits of space and to a note at the beginning of the paper ("It is chiefly with regard to this part of the work that the remarks in the introduction to this paper apply"). This introductory note, which might perhaps have caused the critic to wait, had unfortunately to be omitted.

The article was written at the desire of the editor of the *Nineteenth Century*, and is a popular abstract of an essay in the forthcoming volume of Essays on the Art of Pheidias. This essay has been in print for several years, and had to be reduced by more than one half to take the form of a magazine article. This reduction, again, I was obliged to reduce by more than one-third, omitting all the *pièces justificatives*.

In the eighteen pages of the article (a comparatively large space as such articles go) I was led merely to give the *results* of my investigations, which appeared to the editor of considerable interest to a portion of the cultured public. But I admit that it may fairly be questioned whether it is just or wise thus to give only the results of scientific investigation. On this point I have not definitely made up my mind, and I am willing to learn by the experience which the misunderstanding of the criticism on this paper offers.

For the *pièces justificatives* to my conclusions I can only refer to the forthcoming book, though I cannot be certain whether I shall there satisfy my critic. I there give a considerable number of the instances I have collected to show the prevalence of the personifications of nature referred to. But to realise how certain similarities necessarily point to some relation more or less direct in monuments of Classical or Mediæval art (nay, I might add, in objects of nature), it is essential that the student should have followed these types through the mass of scattered data, and should have developed in himself the feeling for what are criteria of similarity and difference, the power of testing importance or irrelevance in the coi ...ce of phenomena. And though I give what I must consider a sufficient number of instances to prove my conclusions, they will only have adequate weight with those who have been trained in such observation. I have often found myself unable to discover important similarities of form and structure, or delicate difference within general likeness between objects shown me under a microscope, evidently because I was not trained in this class of scientific observation. In matters of art and archæology, on the other hand, it has not yet been realised that efficient observation must also be studied or practised.

There are two points in which the statements in the criticism are misleading.

(1) The writer charges me with my neglect to acknowledge an indebtedness to a previous authority, namely, to Weber, who, in 1822, interpreted one of the two figures I call Thalassa and Gaia as Thalassa. On p. 156 of my book, which has been printed off for some time, I do refer to Weber. Weber's articles, quoted at second and third hand as Schorn's "Kunstblatt," 1821, have, I venture to believe, rarely been seen in the original. They appeared in the art-supplement to a daily paper (*Morgenblatt für Gebildete Stände*), which was issued at Tübingen. Along with many other things I was obliged to omit in the article, there were special reasons why space could not be given to Weber's interpretation, as it would require additional explanation. I could in no way regard it as a confirmation or anticipation of my view. Weber mistakes the western for the eastern pediment, considers the subject of the eastern pediment to be the strife between Athene and Poseidon for the Attic land, and accordingly interprets all these figures as followers of Poseidon: Rhode, Amphitrite, and Thalassa. This mere guessing at Amphitrite and Thalassa on a mistaken basis surely required no mention when I was briefly giving my interpretation of Thalassa and Gaia.

I take a very conscientious view of the duty of acknowledging priority, as I also regret deeply and shrink from discussions concerning it. To avoid such discussion I always prefer to sink any possible claims I might have to absolute originality where any doubt might be maintained. But the remarks of my critic incite me to publish facts which I should otherwise have never published. In my book and in the article in the *Nineteenth Century* I have throughout acknowledged my indebtedness to Professor Brunn for the suggestion of the general cosmical (not "topographical") conception of the scene in the eastern pediment. As a matter of fact, I formed my view of the interpretation of Thalassa and Gaia and of the general conception of the eastern pediment while a pupil of the late Professor Stark at Heidelberg in 1873, and I expressed my views to him, and, since then, to many others. In 1874 Brunn's completely original interpretation appeared, and, though my work has been independent, I thought it undesirable to make assertion of this fact, and have given full acknowledgment to his published work.

2. The second case in which the remarks of my critic are misleading is when he says:—"A little lower Dr. Waldstein does cite one actual instance,—an instance already very familiar to all archæologists, *i.e.*, the mountain-god in the Esquiline wall-painting, representing the landing of Odysseus on the coast of the Læstrygones." This appears to imply that the analogy between this mountain-god and the figure from the Parthenon has already been made. This is untrue. If it is meant to imply that I am not the discoverer of these mural paintings it is meaningless. If it implies that these wall-paintings are exceptionally well known among ancient monuments, or, still more, that this one figure is very familiar, it is erroneous. In any case, as regards my comparison of two monuments, both of which have been published, such a remark is superfluous, and, naturally suggesting the first possible meaning, it is misleading.

I would, finally, add the closing passage of the Essay in the book to indicate the spirit in which I should like my interpretation to be taken. This passage I was also obliged to cut out of the article:—

"Much harm has been done to good and useful suggestions in that they have been overstated. Whoever brings forward a new theory or establishes a new fact becomes so enamoured of the new aspect disclosed before his eyes, that he is apt to overstate its importance, and claims to complete acceptance. The result is that others are stimulated to opposition by the element of excess in the over-

* See the *Builder*, April 11 (p. 567).

statement, and, on their side again, are carried away by opposition, to the destruction of any moderate or modified acknowledgment. Thus artificial antitheses and parties are formed with purely negative impulses and aims, to the detriment of truth. What is extreme in the statement as well as in the denial becomes stereotyped, and the normal progress towards the recognition of truth is suppressed until the violence of opposing forces is spent, and time has so far erased the harshness of the extreme view as to allow the main questions to become again visible in their true importance and usefulness.

In offering this new interpretation of the two figures from the eastern pediment of the Parthenon, I have no desire to bring about a similar state of discussion.

Though personally I feel that this is the most probable of interpretations, I am not blind to the fact that, as matters now stand, we cannot hope to solve the question conclusively and for all time. We can merely hope to find that interpretation which, from the nature of other extant monuments, and the general spirit of Greek art in the time of Pheidias, is most in keeping with that spirit, and with the limited amount of undoubted data which we possess concerning that individual composition.

While writing this essay, I have not held before myself the probability that all authorities will or must straightway relinquish all previous notions, and accept my explanation. But I have felt strongly that, at all events, this view is one which, at least, has much in its favour; that it is one without which the list of possible interpretations is incomplete; and, above all, that it will explain many of the peculiarities in the artist's work itself, both in composition and in detail of execution, which would otherwise be unexplained. And I hold firmly that, of all things to be considered by the interpreting archæologist, the recognisable indications of the artist's work by means of his peculiar language, is of primary importance.

I believe, therefore, that of the many interpretations offered, this is one worthy of consideration, and one which, in scientific duty, required to be published when recognised by the archæologist."

CHARLES WALDSTEIN.

ARCHITECTURAL STYLE.

SIR,—Will you kindly allow me to call attention to two errors that crept into my article on "Style" last week [p. 644, *ante*]? In the fifth paragraph, "initiated" should obviously have been "imitated." I hope that it is equally obvious that I did not wish to speak of the clergy as being "deficient" in matter of painting and sculpture,—the word should have been "deferential,"* the whole gist of the article being that they should, like house-building clients, dictate their requirements to us, instead of deferring to such ancient examples as we are forced to recommend, for want of fuller instructions. Obedience to the Prayer Book will, of course, check the introduction of any radical changes.

EDWARD J. TARVER.

THE TUBULAR SYSTEM OF DRAINS AND SEWERS.

SIR,—The origination of the tubular system of drains and sewers for houses and towns [see page 636, *ante*] is due to the strong advocacy of Mr. Edwin Chadwick, C.B., in his Report on the Sanitary Condition of the Labouring Population of Great Britain, 1842, and in subsequent Reports in 1844–45, on the Health of Towns. But the first to practically use tubes for such purposes in the metropolis was myself. This was while I was chief Surveyor of the Westminster Districts of Sewers. In 1844, or 1845, when most of the present surveyors were in their infancy, I wrote articles, which appeared in the *Builder*, on the great defects of brick drains, and recommending stoneware pipes to be used for drains instead. At that time no such pipes were made or to be had in the metropolis. Shortly after, Mr. Thomas Peake, of Tunstall, in Staffordshire, who was a manufacturer of terro-metallic drain-pipes, and who had read my articles in the *Builder*, informed me that he had opened a depot at Macclesfield Wharf, City Basin, London, for the sale of his pipes and other goods. I thereupon ordered a large quantity of his pipes, which I used in the drains and sewers under the jurisdiction of the Westminster Commission. Previously to this I had used some butt-joint flue-pipes for the same works. Some time after I had been using Mr. Peake's pipes, Mr. Wm. Northew, of Lambeth, brought me two glazed stoneware pipes, 9 in. diameter, and 2 ft. long, for my inspection. As I understood he could make and supply these pipes, I reported on their suitability and superiority, and recommended them for adoption. This the Commissioners agreed to, and sanctioned my ordering a large quantity of them, 6 in., 9 in., and 12 in. diameter. I then went to Mr. Northew, who told me he could not execute the order, as he would be compelled to erect new shops for making and drying them, and new kilns for burning them. Upon this I saw three other firms of potters in Lambeth, namely, Green's, Doulton's, and another whose name I have forgotten, all of whom declined the order. At last I called on Mr. Thomas Smith, of Prince's-street, Lambeth, who by degrees manufactured and delivered the pipes. After that, all the Lambeth potters began to make them, and, at my recommendation and persuasion, architects and builders began to use them; and so bricks for house-drains and small sewers were entirely discarded, and stoneware pipes were used instead. This is the true history of the first use of stoneware pipes for drains and sewers in the metropolis.

While I am writing I may as well record the fact that a great advance towards the tubular system for house drains and sewers was started by Mr. Thomas Cubitt in Belgravia. With half-round tiles, 9 in. diameter, and 1½ in. thick, which were made at his brickworks in Kent, he formed the channels and crowns of his drains. These half-round tiles he solidly surrounded with concrete, and bedded and pointed the joints thereof with cement, so as to prevent the leakage of foul liquids and gases through them. In this method of constructing drains we had the nearest possible approach to the tubular system of drains. Mr. Cubitt took great interest in sanitary improvements. In these matters he was far ahead of many of the architects and builders of the time. I had frequent conversations with him on the excellency of his drains, and on the superior workmanship of the sewers he put down. He discussed with me a plan he proposed for carrying main drains through the metropolis, and down to the sea, for intercepting the sewage from the Thames. The plan of separating the sewage from the rainfall, afterwards called the *separate-system*, was then simmering in my mind. Practical experience began to teach me that it was a great mistake to combine the two kinds of drainage in the same channels. I remember he favourably entertained my idea as to the separate-system, and encouraged me to systematise and propose it. When I subsequently did this, the then Royal and Railway Engineers of the Metropolitan Commission flatly opposed and burked it. The great engineer who afterwards made up and carried out a main drainage scheme, worked on the old lines; and hence the abominable condition the Thames has been in ever since. When the Westminster Commission in 1846 adopted my egg-shaped sections of sewers, Mr. Cubitt was the first to apply to the Commissioners for leave to build them in the squares, roads, and streets in Pimlico. He built 7,500 ft. run of these sewers during that year, and saved thereby over 1,800*l.*, and had infinitely better sewers than he would have had by the odd system of sewers with nearly flat bottoms and upright sides. Mr. Cubitt's drains before referred to, like all his works, and all his actions, were good and honest. If any one should ever write the "Lives of the Builders," the life of Thomas Cubitt would occupy a most interesting and worthy place among them.

JOHN PHILLIPS.

THE ASHPITEL PRIZE.

SIR,—At the Institute meeting, held on the 4th inst., Professor Kerr asked "Why the Ashpitel Prize had been withheld from the best of the seventeen candidates who had passed the examination for Associateship during 1884." Mr. Arthur Cates, in replying, "Expressed regret that the Council for two years had been unable to recommend any candidate as worthy of being honoured by this distinction,—a distinction which, if lightly given, would discredit the prize itself. It is the most distinguished honour which any candidate can receive; it is an honourable distinction which should not be lightly thought of, but should be secured by a recipient worthy of the honour of being designated in the list of members as Ashpitel Prizeman."

This prize was instituted about 1873, and it has only been awarded four times in these twelve years, viz.:—

In 1873, to Hugh Stannus.
In 1877, to F. T. Baggallay.
In 1879, to Bruce John Capel; and
In 1882, to Thomas Purves Marwick.

The prize has now assumed considerable importance. It is given to the candidate "who has, in the opinion of the Council, most highly distinguished himself in the examinations for the degree of Associate held during each year." It is thus the most important prize in the gift of the Council. The examination for the Associate degree embraces all the branches of an architect's training, and it follows that the man who all over is the most distinguished Associate of his year attains a highly honourable position and one not easily gained.

For this high honour the Council award a prize of books valued at 10*l.*, while for essay writing they give a medal and 25*l.*; for design, a Soane medallion and 50*l.*; and for sketching, a medal and 40*l.*! Medals are given with nearly all the prizes in the gift of the Institute,—the Soane, Grissell, Pugin, and Godwin prizes, as well as those for essays and measured drawings. I venture to affirm that the medal is the most popular form of award; and I would suggest to the Council the propriety of adding a medal to the Ashpitel Prize.

I am perfectly sure that candidates going up for examination would prepare themselves thoroughly to compete for this distinction. At present they give the minimum study in order to pass. Give an object to strive for in the shape of a good prize accompanied by a tangible record like a medal,—which one can show,—and you will not only give a zest to those preparing for examination, but you will increase the number of candidates for the degree.

The cost would be trifling, and I do not think that on another occasion Mr. Cates would have reason to complain of the lack of worthy candidates.

A. B. C.

COOKING APPARATUS FOR LARGE INSTITUTIONS.

SIR,—In reply to Mr. Crane's letter in your last issue [p. 672], I cannot understand how any one can assert that the escape of steam, on opening the cover of my cooking apparatus, is a defect. This is, of course, quite natural, and Mr. Crane can no more avoid this than I can; besides, I only contended that no steam escaped during the process of cooking. Further, Mr. Crane says that cooking takes fifty per cent. longer in my apparatus than by the ordinary method; this is also a mistake, for I can cook just as quickly as in any other one if I employ the same temperature as used by others; but it stands to reason that if I cook at a lower temperature, I must of course take a longer time. Every cook knows that meat cooked slowly is more palatable and more nourishing than when it is cooked quickly, and this is the reason for my preferring this method. For instance, a piece of meat weighing 10 lb. if kept at boiling-point, is thoroughly cooked in two hours, *i.e.*, 120 minutes; therefore it takes 120 minutes × 100° Celsius = 12,000 minute-degrees; but if it is cooked at 80° Cel., it takes $\frac{12,000}{80} = 150$ minutes, which is a very simple problem.

It is well known that when meat is cooked at 100° Cel. a great deal of the nutriment is lost.

CARL BECKER.

*** We cannot publish any more letters on this subject.

The Student's Column.

DESCRIPTIVE GEOMETRY.—XV.

How to distinguish the lines seen from those that are hidden either in an elevation or a plan.

WE have said that in representing solids it was usual to dot the lines hidden by the solid itself. We are supposed to look down on the plan from above, and to look at the elevation from a position in front of it; therefore, if we pierce the solid by a vertical line, we shall see on the plan the highest point of penetration, whereas the lowest is hidden. On the other hand, if we suppose the solid to be transpierced by a line perpendicular to the elevation, the point of penetration which is in front is seen on the elevation, whereas the one that is behind is hidden.

The projection of an object limited by plane surfaces is made up of the projections of its arrises; it is evident that these projections will be enclosed by a polygonal figure which will form the *outline* of the object, this outline separates the parts that are seen from those that are hidden. To determine which are the arrises that are seen, we select two arrises the projections of which cross one another, and we then find out which of the two is seen; when this is done, we know that all the arrises connected with the one seen will be also seen up to the outline of the object, the others will be hidden. (See fig. 77.)

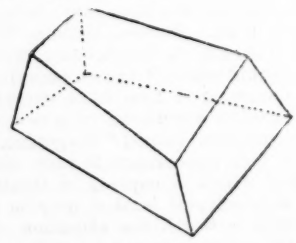

Fig. 77.

Draw the elevation and plan of a triangular pyramid.

Let *a*, *b*, *c*, *d* be the angles of the pyramid, we join them, and find at once both the outlines a^h, b^h, c^h, d^h and a^v, b^v, c^v, d^v on the plan and elevation.

On the plan the arrises a^h, b^h, and c^h, d^h cross one another; consulting the elevation, we find that *c d* is at a higher level than *a b*, therefore we conclude that c^h d^h is seen and a^h b^h is hidden. On the elevation the arrises a^v c^v and

* The word in Mr. Tarver's MS. was "deferent," and the printer unfortunately rendered it "deficient."—ED.

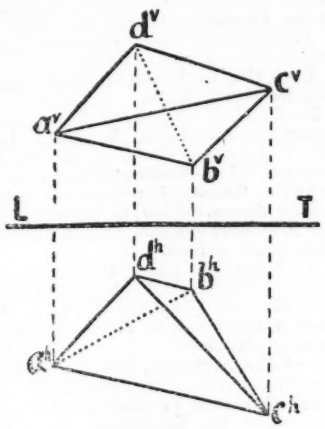

Fig. 78.

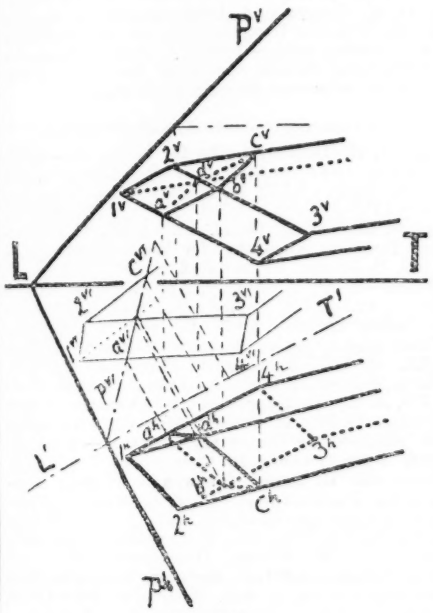

Fig. 79.

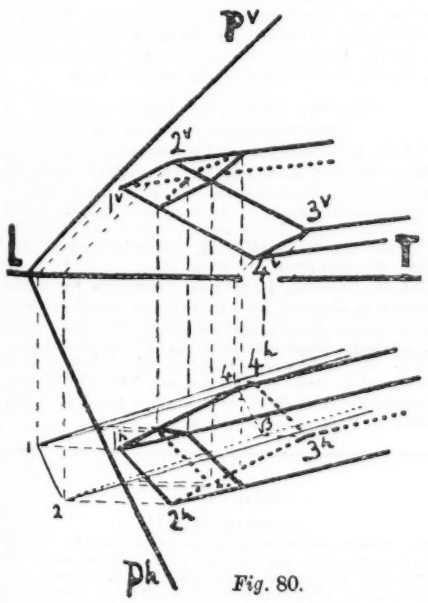

Fig. 80.

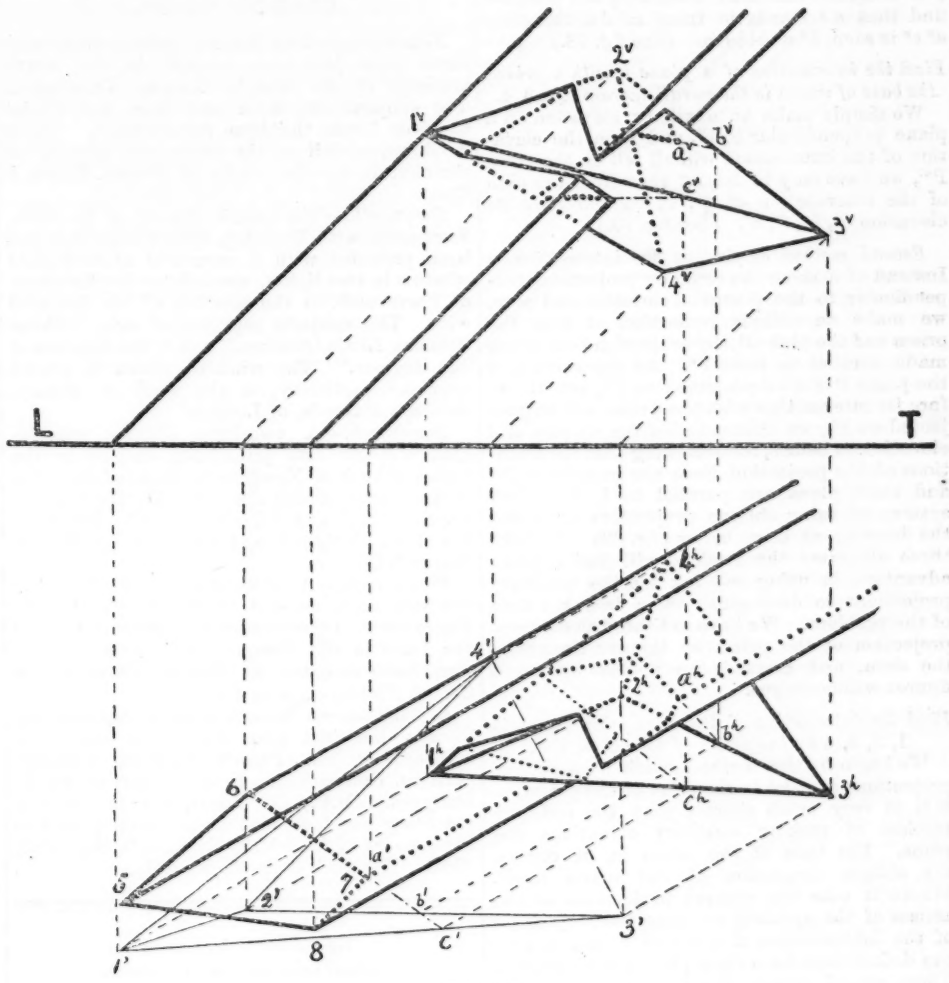

Fig. 81.

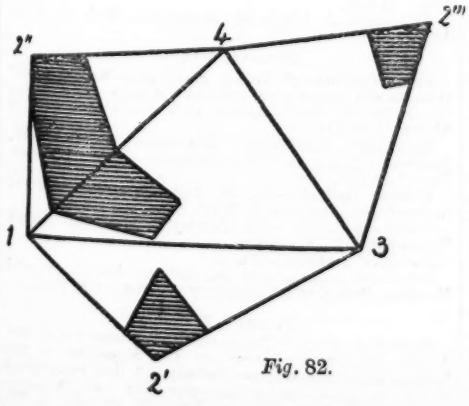

Fig. 82.

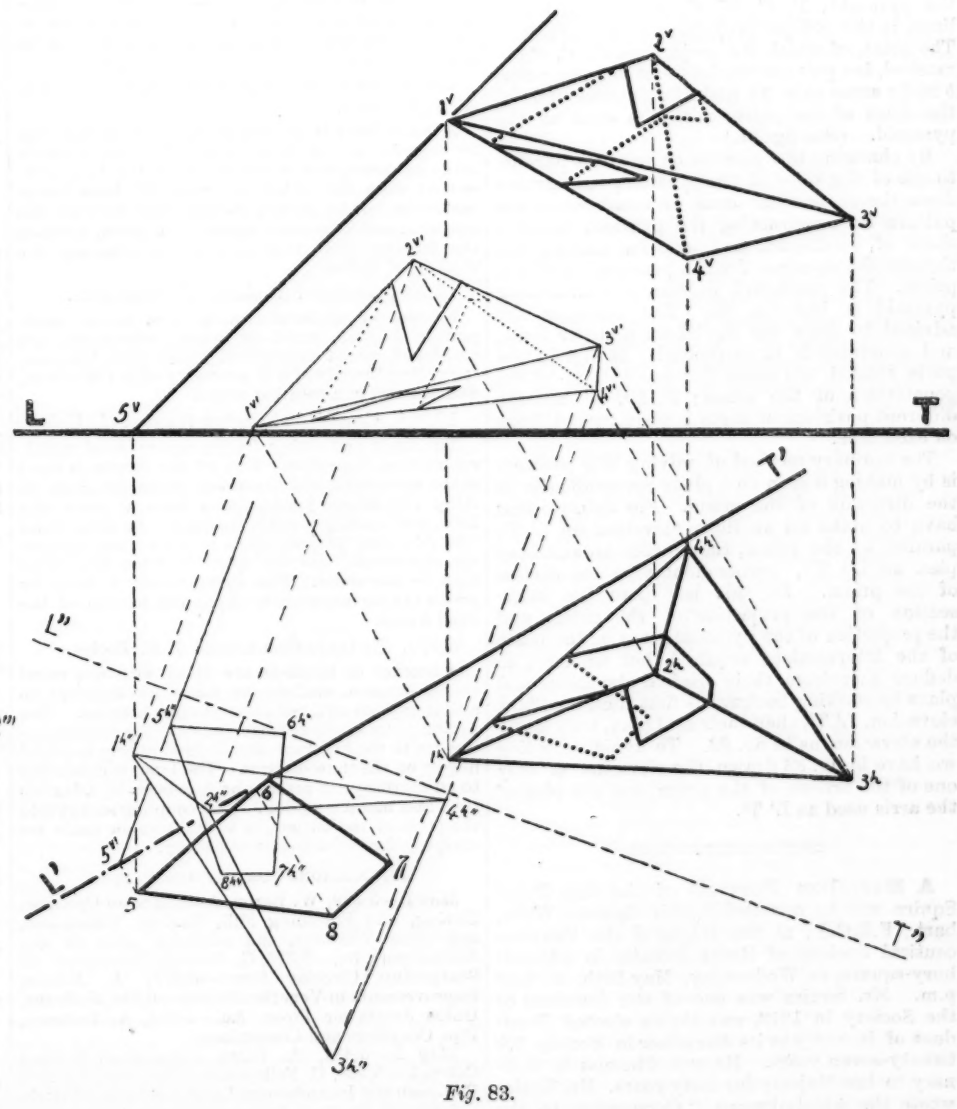

Fig. 83.

b^v d^v cross one another; consulting the plan, we find that $a\,c$ stands in front of $d\,b$, therefore a^v c^v is seen, b^v d^v hidden. (See fig. 78.)

Find the intersection of a plane P with a prism, the base of which is the parallelogram 1, 2, 3, 4.

We simply make an auxiliary elevation on a plane perpendicular to P^h, and then the elevation of the intersection will all fall on the trace P^{v1}, we have only to deduct therefrom the plan of the intersection a^h, b^h, c^h, d^h, and then its elevation a^v, b^v, c^v, d^v. (See fig. 79.)

Second method of finding the intersection.—Instead of making the ordinary projections perpendicular to the planes of elevation and plan, we make an oblique projection of both the prism and the plane P, the projection lines being made parallel to trace P^v. All the surface of the plane P will be projected on P^h, and therefore its intersection with the prism will be projected on P^h; we deduce therefrom its plan and elevation as before, remembering that the elevations of the projection lines are parallel to P^v, and their plans are parallel to L T. This system of using oblique projections simplifies the drawing, as seen below (fig. 80). In both these diagrams the student will find a great advantage in using red ink for the auxiliary projections to distinguish them from the data of the problem. We have indicated the oblique projection of the prism by thinner lines than the data, and marked the angles by small figures without signs.

Find the intersection of the triangular pyramid 1, 2, 3, 4 *by the prism of base* 5, 6, 7, 8.

We begin by the method which uses oblique projections parallel to the sides of the prism, as it is so very much shorter than the ordinary method of making auxiliary elevations and plans. The base of the prism is, of course, the oblique projection of the prism itself. Where it cuts the oblique projections of the arrises of the pyramid we have the projections of the intersections of the two solids, and we can deduct therefrom their plans and elevations. There are, of course, two intersections in the surface of the pyramid, the one where the prism enters, the other where it comes out of the pyramid; 1^1, 2^1, 3^1, 4^1, marked with thin lines, is the oblique projection of the pyramid. The point, of which the projections a^1, a^h, a^v are marked, is a point of the intersection; the points b and c serve only to find the intersections of the sides of the prism with the sides of the pyramid. (See fig. 81.)

By changing the plan so as to get it parallel to one of the sides of the pyramid, and turning down the three other faces, we could obtain the pattern for constructing the pyramid out of a sheet of cardboard, and also for cutting out thereon the openings for the penetration of the prism. The cardboard pattern of a triangular pyramid is like fig. 82. The students are advised to draw the fig. 81 on a larger scale, and construct it in cardboard. In fig. 82 the parts shaded are those that are cut out by the penetration of the prism; 2^1, 2^{11}, 2^{111} are the different positions of angle 2 when turned down on each face.

The ordinary method of solving this problem is by making a plan on a plane perpendicular to the direction of the prism. For this, we first have to make an auxiliary elevation on L^1 T^1, parallel to the prism, then make an auxiliary plan on L^{11} T^{11}, perpendicular to the arrises of the prism. In this last plan the intersection of the projection of the prism and the projection of the pyramid gives us the plans of the intersections required, but we have to deduce therefrom their original elevations and plans by working backwards first their auxiliary elevation, L^1 T^1, then their real plan, then lastly the elevation, as in fig. 83. To avoid crowding we have in fig. 83 drawn the elevation of only one of the arrises of the prism, and the plan of the arris used as L^1 T^1.

A Medallion Portrait of the late Peter Squire will be unveiled by Sir Spencer Wells, bart., F.R.C.S., at the House of the Pharmaceutical Society of Great Britain, in Bloomsbury-square, on Wednesday, May 20th, at four p.m. Mr. Squire was one of the founders of the Society in 1842, was thrice elected President of it, and was its Examiner in Botany for twenty-seven years. He was Chemist in Ordinary to her Majesty for forty years. Mr. Squire wrote the widely-known "Companion to the British Pharmacopœia."

STAINED GLASS.

Kensington.—Two Munich stained-glass windows have just been erected in the south transept of St. Mary's, Boltons, Kensington. The subjects are Ruth and Boaz, and Christ blessing Little Children respectively. These windows, as well as the other two already in the church, are the works of Messrs. Mayer & Co.

Farnworth.—The parish church of St. John, Farnworth-with-Kearsley, near Bolton, has just been provided with a memorial stained-glass window in two lights, erected by Dr. Kershaw, of Farnworth, to the memory of his deceased wife. The subjects represented are, "Christ Blessing Little Children," and "The Baptism of our Saviour." The window, which is placed over the baptistery, is the work of Messrs. Burlison & Grylls, of London.

Newchurch.—A two-light Munich stained-glass window has just been erected in the parish church of Newchurch, Rossendale. The subjects represented are "St. Elizabeth teaching St. John," and "Giving Alms." The work has been designed and executed by Messrs. Mayer & Co.

Blairgowrie.—A stained-glass window has recently been erected in St. Mary's Church, Blairgowrie, representing the Presentation of our Lord in the Temple. The work was designed and executed by Messrs. Warrington & Co., of Fitzroy-square, London.

Kensington.—A Munich window representing Charity has just been erected in the south transept of St. Peter's Church, Cranley-gardens, Kensington. It is the gift of Mr. C. Dalrymple, M.P., the inscription at the foot recording the fact that it has been placed to the memory of Alice Mary Dalrymple, Sept. 2nd, 1884. The work is by Mayer & Co.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

1,901, Dwarf Window-blinds. W. Kay.

A solution of fluorescene or aniline in a gelatinous medium is treated with boroglyceride or other antiseptic substance, and in a film on a sheet, or between two sheets of glass, which may then be used for dwarf blinds or analogous purposes.

2,686, Device to Prevent Rattling of Sashes. A. B. Johnson.

A small lever is pivoted at each side of the sash by a screw to the inner head. The short end is made eccentric, and is heavier than the long end, so that when the sashes are open the lever hangs vertically, but by pulling the long end forward the eccentric end is pressed against the plate, keeping the meeting-bars together, and preventing the rattling of sashes.

11,108, Artificial Asphalt. F. Bosshardt.

Natural or artificial stones, ores, earth, sand, powdered glass, wood or paper substances, are powdered, mixed mechanically with pure bitumen, sprinkling the mixture if necessary with petroleum, and warmed in a rotating vessel.

13,075, Casement Window-frames. J. Elsley.

The fixed and swing frames are made of metal, rolled to an E section. One of the frames is fixed in the stonework, and the swing frame fits close to it by two rebate joints, being flush at front and back, and leaving a space between. In some cases two ribs may project, so as to bear alone against the stonework, and the space between the frame may be narrowed. The swing frame is hung by pivots taking into sockets at top and bottom of the fixed frame.

4,577, Portable Gas Lamp. J. E. Kelby.

A bracket or brackets are fitted with the usual cocks, burners, and shades, which are attached to a sliding piece on a vertical rod upon a stand. The sliding piece is pierced by a curved tube for supplying gas to the brackets, and is fixed at any required height by the thumb-screw. The lamp is connected to an ordinary gas-bracket or chandelier by a flexible tube and metal coupling. The coupling screws into the place of the burner, or over the screw made for carrying the globe holder or gallery.

APPLICATIONS FOR LETTERS PATENT.

May 1.—5,369, W. Rigby, Appliance for Opening, Closing, and Fastening Mill, Factory, Warehouse, and other Windows, and retaining same in any desired position.—5,374, G. Garrett, Machinery for Sharpening Circular Saws.—5,377, A. Adams, Improvements in Venetian Blinds.—5,384, J. Evans, Union Joints for Pipes, &c.—5,403, A. Rollason, Pipe Couplings and Connexions.

May 2.—5,414, A. Paice, Expanding Writing Cabinet.—5,420, C. Falkenstein, Combined Electric Bell-push and Incandescent Lamp-holder and Switch.—5,423, E. De Pass, Improvements in Gutters and means for connecting same.—5,432, R. Elmore, Perspective Demonstrator.—5,437, A. Link, Preventing the Formation of Ice and other Atmospheric Precipitations upon Windows.—5,442, F. Ransome, Manufacture of Cement.

May 4.—5,456, C. Chapman, Improvements in Apparatus for Boring Wells.

May 5.—5,497, J. Akeroyd, Improvements in Cooking-ranges, &c.—5,506, R. Heap, Improvements in Water-closet Seats.—5,529, W. Riches, Improvements in Combination Cabinets, &c.—5,536, J. Allen and J. Ramsay, Improvements in Cooking and Heating Stoves.—5,537, G. Halbach, Improvements in Bow Saws.—5,555, J. Jones, Folding or Adjustable Bench or Seat.

May 6.—5,568, H. Fiske, Pavements, Facing-blocks, &c.—5,570, G. Budd, Apparatus for Ornamental Turning and Shaping.—5,579, A. Diss and H. Goodey, Construction of Fireproof Hearths and other Parts of Buildings.

May 7.—5,629, A. Seggie, Machines for Grinding, Polishing, Graining, and Preparing Stones.—5,635, M. Wallace, Combined Ventilating and Flap Valve, or Chimney-door for Kitcheners, &c.—5,636, S. Coombs, Mechanical Door-check.—5,639, R. Hodges and F. Lilley, Adjusting Door-knobs to Spindles.—5,644, T. Constantine, Improvements in Movable Bottom Grates of Ranges and Stoves, and Appliances for operating same.—5,661, J. Horne, Apparatus for Warming Houses and other Buildings.—5,665, L. Wesp, Improved Heating Apparatus.

PROVISIONAL SPECIFICATIONS ACCEPTED.

2,731, E. Deacon, Locks for Doors, &c.—2,785, J. Willis, Improvements in Picks, Hammers, and similar Tools.—2,859, L. Bickley and J. Winn, Improved Paint Brush.—3,780, R. Pyne, Fasteners for Sashes, Casements, Doors, &c.—4,209, F. Henderson, Flushing Apparatus for Water-closets, &c.—4,294, P. Jensen, Improved Arch or Span Bricks or Blocks.—4,398, C. Murray, Apparatus for Making Bricks, &c.—4,429, T. Redman, Fixing Sun-burners or Ceiling Lights.—4,469, B. Hewetson, Securing Slates used to repair damaged Slates on Roofs.—4,521, H. Yull, Water-waste Preventer.—4,614, A. Clark, Bolts or Fasteners for Doors, Shutters, &c.—4,736, A. Squire, Improvements in Venetian or Lath Blinds.—14,463, E. Stacey, After-flush Apparatus for Water-waste Preventing Cisterns.—4,154, R. Best, Improvements in Chandeliers.—4,247, G. Crowe and W. James, Cisterns or Flushing Apparatus for Water-closets.—4,486, E. Ormerod, Apparatus for the production of Paving Slabs, Blocks, Sinks, Roofing Tiles, &c., in Concrete, Terra-cotta, &c.—4,668, W. Wilson, Ornamenting Wall and other Papers.—4,681, J. Barwick, Ventilating Pipe and Cap.—4,721, J. Fell, Pneumatic Door Check Spring.—4,726, R. Jones, Window Sash Fastener.—4,819, J. Baker, Disinfecting and Deodorising Apparatus for Water-closets.—4,926, G. Wells, Water-closets and Appliances for same.—5,004, W. Lake, Preservation of Wood for Paving Purposes.—5,027, J. Smith, Improvements in Stench Traps.—5,041, T. Howie, Ventilating Rooms or Buildings.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

7,268, J. Thomasson, Improvements in Ventilators.—10,105, A. Clark, Improved Attachment for Squares for Builders' and Joiners' Use.—10,125, E. Jagger, Slow-combustion Stoves.—2,453, G. J. and S. T. Messenger, Improvements in Ventilators and Chimney Cowls.—4,078, H. Gilchrist and C. Bellamy, Construction of Gas Pliers and Tongs.—7,864, C. Inwood, Improved Apparatus for Ventilating and Heating by Air.—406, M. Macleod, Laying Asphalte Roads, Pavements, Roofs, &c.—1,872, A. Putney, Improvements in Wood Flooring.—3,875, H. Ibbotson, Opening and Closing Sash Windows of any description.—4,243, H. Allison, Improvements in Burglar Alarms.—4,297, H. Lake, Locks for Fastening Doors, &c.

MEETINGS.

SATURDAY, MAY 16.

St. Paul's Ecclesiological Society.—Visit to Chelsea Old Church, and other churches in Chelsea, under the guidance of Mr. Somers Clarke, F.S.A. 3.30 p.m.

Association of Municipal and Sanitary Engineers and Surveyors.—Midland Counties District Meeting at Nottingham. 11 a.m.

Edinburgh Architectural Association—Visit to Aberdour.

MONDAY, MAY 18.

Royal Institute of British Architects.—Mr. Alexander Graham will read a paper entitled "Remains of the Roman Occupation in North Africa, with special reference to Algeria." 8 p.m.

Surveyors' Institution.—Discussion on Mr. W. Mathews's paper on "The Influence of Taxation upon Rent." 8 p.m.

Victoria Institute.—Dr. M. Eells "On the Results of Archæological Research in North America." 8 p.m.

University College.—Mr. Barclay V. Head on "Greek Numismatics." V. 4 p.m.

Inventors' Institute.—8 p.m.

Edinburgh Architectural Association.—Annual General Meeting: President's Valedictory Address. 8.30 p.m.

TUESDAY, MAY 19.

Institution of Civil Engineers (1).—Discussion of Mr. A. M. Thompson's paper on the Signalling of the London and North-Western Railway; (2, time permitting) Papers on Steam-engine Indicators and Indicator Diagrams, by Professor Osborne Reynolds and Mr. A. W. Brightmore. 8 p.m.

Statistical Society.—Mr. A. K. Connell on "Indian Railways and Wheat Trade." 7.45 p.m.
Birmingham Architectural Association.—Mr. O. Essex, on "Breweries." 7.30 p.m.

WEDNESDAY, MAY 20.

British Archæological Association.—Mr. Thomas Blashill on "The Cistercian Abbey of Dore." Mr. Alfred C. Fryer on "Cornish Crosses." 8 p.m.
Builders' Foremen and Clerks of Works' Institution.—Ordinary Meeting. 8.30 p.m.
Royal Meteorological Society. — Papers on "Wind Velocities and their Measurement," by Lieut.-Col. H. S. Knight and Dr. W. Köppen. 7 p.m.
Society of Arts. — Professor James Dewar on "The American Oil and Gas-fields." 8 p.m.

THURSDAY, MAY 21.

Society for the Encouragement of the Fine Arts.—Mr. G. A. Storey, A.R.A., on "Footprints of the Beautiful." 8 p.m.
Royal Archæological Institute.—(1) Mr. J. P. Harrison on "Chevron Beads and Blue Bugles from Peruvian Graves." (2) Rev. G. F. Browne on "'Scandinavian' or 'Danish' Sculptured Stones found in London, and their bearing on supposed 'Scandinavian' or 'Danish' Origin of other English Sculptured Stones." 4 p.m.
Society of Antiquaries.—8.30 p.m.
Dundee Institute of Architecture. — Mr. J. G. H. Spindler on "Art-Work in the Middle Ages."

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

MAY 4.

By J. & R. KEMP & CO.

Paddington—140 and 142, Praed-street, 36 years, ground-rent, 10*l.*	£1,900

By THOMAS WAKEFIELD.

Islington—10 and 11, Barford-street, 64 years, ground-rent 10*l.*	815
Limehouse, Ropemaker's-fields—A plot of freehold land	345
New-cross—129, Woodpecker-road, 76 years, ground-rent 6*l.* 10s.	520

By MULLETT, BOOKER, & CO.

Hyde Park—60, Great Cumberland-street, 19 years, no ground-rent	2,350
Great Portland-street—51, Bolsover-street, 17 years, ground-rent 13*l.* 13s.	655
Euston-road—An improved rent of 108*l.* a year, term 17 years	975
Bryanston-square—Ground-rents of 120*l.* a year, term 24 years	1,430
Ground-rents of 50*l.* a year, term 22 years	515
Ground-rents of 100*l.* a year, term 22 years	1,045

MAY 5.

By Messrs. LEAGE.

Hoxton—Ground-rents of 40*l.* a year, reversion in 76 years	1,000

By TOWERS, WILLIAMSON, & ELLIS.

Bayswater—9, Durham-terrace, 64 years, ground-rent 10*l.*	1,020

By DRIVER & CO.

Kensington—A plot of land, area 9,000 ft. freehold	16,000

By REYNOLDS & EASON.

Upper Clapton—1 to 5, Northwold-road, 75 years, ground-rent 15*l.*	700
6 to 12, Northwold-road, 75 years, ground-rent 18*l.*	1,750

By FLEURET & SON.

Wood-green—The residences "Southdene" and "Highclere," 94 years, ground-rent 12*l.*	700
3, Earlham-villas, 96 years, ground-rent 6*l.* 6s.	490

By GEORGE GOULDSMITH, SON, & CO.

Belgravia—13, Wilton-crescent, 39 years, ground-rent 3*l.* 5s.	5,450
1 to 5, Chester-place, 39 years, ground-rent 25*l.*	9,340
11 and 12, Chester-square, 39 years, ground-rent 6*l.*	6,010
38, Wilton-crescent, with stabling, 39 years, ground-rent 5*l.*	4,220
Improved ground-rents of 138*l.* a year, term 39 years	3,210

By DEBENHAM, TEWSON, FARMER, & BRIDGEWATER.

Ealing Dean—1 to 8, Felbrigg-villas, freehold	3,760
Ground-rents of 10*l.* a year, reversion in 70 years	310
1 to 8, Minton-villas, copyhold	2,890
1 to 3, Singapore-villas, copyhold	1,740
Copyhold ground-rent of 12*l.* a year, reversion in 59 years	290
Ealing-green—"Price Cottage," and three other cottages, freehold	800
St. Mary's-road—Three freehold houses with shops	1,940
Ealing—The residence called "Howard House," and seventeen cottages, copyhold	3,020
Brentford—34 and 35, Hamilton-road, freehold	510
Hammersmith—15 and 17, Brook-green-road, copyhold	3,000
11, Brook-green-road, copyhold	350

By SEDGWICK, SON, & WEALL.

Watford—153 and 155, High-street, and a plot of land, freehold	1,425
Bushey, Aldenham-road—Two freehold residences	1,250

MAY 6.

By WHITE, BERRY, & TAYLOR.

Chelsea—18 and 19, South Parade, freehold	2,410

By RUSHWORTH & STEVENS.

Banbury, near—"Bodicote House," and 33a. 1r. 23p., freehold	14,000
St. John's Wood, Clifton-hill—"The Carlton Mews," 57 years, ground-rent 2*l.*	2,120
Sutton, Benhill Wood-road—"Percy House," 80 years, ground-rent 12*l.*	300
"Malvern House," term 80 years, ground-rent 12*l.*	305
"Camden House," term 80 years, ground-rent 12*l.*	420

By HARMAN & MATTHEWS.

Peckham-rye, Barry-road—"Myrtle" and "Barossa" villas, 91 years, ground-rent 7*l.* 7s.	945

MAY 7.

By G. A. BICKERTON.

Isleworth—"Syon Lodge," and 3 acres, copyhold and freehold	3,550
Limehouse—298, Burdett-road, 76 years, ground-rent 8*l.*	445

By NEWBON & HARDING.

Hoxton—38, Allerton-street, 23 years, ground-rent 3*l.* 10s.	£120
Mile End-road—Freehold rental of 43*l.* a year, reversion in 14 years	1,220
One-fourth share of Nos. 442 to 452 even, Mile end-road, freehold	43
Barnsbury—27, Arundel-square, freehold	900

By J. & W. JOHNSON & CO.

Hackney—68, Pritchard's-road, 48 years, ground-rent 3*l.* 10s.	335

By BEAN, BURNETT, & ELDRIDGE.

Peckham-road—11, The Terrace, long leasehold	750

By FAREBROTHER, ELLIS, CLARK, & CO.

Uxbridge—The freehold residence, "The Vineyard"	1,900
A plot of land, opposite	405
Bramshot, Surrey—An enclosure of freehold land, 20a. 2r. 6p.	400
Barnsbury-square—No. 9, term 23 years, ground-rent 6*l.*	550
Battersea Park-road—A plot of freehold land	790

By PROTHEROE & MORRIS.

Leytonstone—A plot of freehold land	500

MAY 8.

By JONES, LANG, & CO.

City—78, Mansell-street, freehold	2,000

By COLLETT & COLLETT.

Notting-hill—37, Lancaster-road, 78 years, ground-rent 10*l.*	700

By BAKER & SONS.

Tufnell Park-road—Nos. 164 and 166, term 82 years, ground-rent 14*l.*	800
Harrow—A plot of freehold land	36
Pinner-road, seven plots of freehold land	237
1 and 2, Gothic-villas; and a plot of land, 89 years, ground-rent 7*l.*	200

Miscellanea.

Building and Sanitary Work at Walthamstow.—The annual report of the Surveyor (Mr. G. B. Jerram) to the Walthamstow Local Board, for the year ending March 25th, 1885, says that during the past twelve months there has been a perceptible diminution in the number of houses being erected, in the formation of new streets, and in the laying out of new estates, compared with that of a year or two ago. 153 plans have been received for the proposed building of 519 dwelling-houses, two churches, two corrugated iron buildings, and fifteen stables and sheds, and including also additions and alterations to twenty-two buildings, and fourteen plans for new drains. There have also been seven plans received for the construction of new streets. Over 400 houses and one Board school, two churches, and two corrugated iron rooms, have been built or in process of erection, of which about fifty-six have been erected in districts where there is no system of sewers, thereby necessitating the construction of cesspools; of these 48 houses have been erected in the low-level district, west of St. James's-street and Black Horse-lane, but these are not all inhabited. The length of new streets formed on private estates is about one mile, one furlong; and about 2¼ miles of soil and surface-water sewers have been constructed. The works executed by the Board comprise the following, viz.:—New sewers, in Union and Prospect roads, and the alteration to the syphon in the northern main sewer; the widening of Clay-street, west of Greenleaf-lane; over 6½ miles of footpaths in the principal streets have been paved with asphaltic tar paving, and about 2 miles 3 furlongs of kerb have been laid in the public roads; some 2 miles 5 furlongs in length in main roads, and 1¼ mile in length of other roads have been reconstructed with granite, by means of a special loan sanctioned by the Local Government Board.

Obituary.—Mr. Charles Moreing, who died at his residence, 37, Spring-gardens, on the 6th inst., at the age of 75, was probably but little known to the present generation, but he enjoyed years ago an extensive practice and amassed a considerable fortune. His most important work was Ingress Abbey, near Greenhithe, for the late Alderman Harmer, the proprietor of the *Weekly Dispatch*, who expended upwards of 120,000*l.* upon the building, which forms a prominent object in the landscape seen from the river. He also designed Messrs. Swan & Edgar's shop-front at the corner of Regent-street and Piccadilly-circus. Mr. Moreing had resided for the last few years at Hastings, he having taken over from the mortgagees the site of Warrior-square, upon which large sums had been expended, at first without any profitable result, but which eventually became a very lucrative investment. Mr. Moreing was unmarried, and, although he had for some time past withdrawn from the active pursuit of his profession, was unremitting in his attention to business up to the last.

New Fever Hospital, Coventry.—The new permanent hospital, which the Corporation are providing for the isolation and treatment of infectious diseases, is rapidly approaching completion,—indeed, it is practically finished, and might be made ready for occupation in a fortnight. The site has a frontage to the Stoney Stanton-road, and adjoins the Coventry and Warwickshire Hospital estate. The buildings comprise four detached blocks; the front building, which is 260 ft. from the road, is intended for the administrative department, and is of two stories, consisting of a surgery, 14 ft. by 13 ft.; a room of the same size for the matron; stores and kitchen; four bed-rooms, scullery, larder, and other accommodation. The next block, on the south side, 330 ft. from the road, is for scarlet fever patients, and consists of two wards, one for six beds and another for four beds, nurse's room overlooking the wards, and a bath-room. On the opposite or north side, at a distance of 119 ft., is a hospital of similar size for small-pox patients. The fourth side of the square, on which it has been proposed to erect a supplementary block for paying patients, is left open. The total accommodation will be for twenty patients. The architects are Mr. E. J. Purnell, City Surveyor, and Messrs. G. & I. Steane, Little Park-street, the drainage being under the supervision of Mr. Purnell. The gas-fittings are by Mr. Hodson, of Coventry, and made to special design. The contractor is Mr. Thomas Mayo, builder, Coventry, and the clerk of the works Mr. George Dalton. The cost of the building, which is upwards of 4,000*l.*, will be defrayed by loan, to be paid off in thirty years.

Mr. David Brandon, F.S.A., and the Institute of Architects.—At the annual meeting of the Royal Institute of British Architects, held on the 4th inst., regret was expressed at Mr. David Brandon's resignation of the office of Vice-President. Mr. Octavius Hansard, chairman of the Library Committee, remarked that Mr. Brandon had long been a member of the Finance Committee, and had taken special interest in the financial prospects of the Institute. In a letter to Mr. Hansard, dated May 2, Mr. Brandon wrote:—

"As it is apparent that the expenditure will be greater next year than usual, in consequence of the publication of the library catalogue, and as I am desirous of preventing, as far as possible, the necessity which I fear will arise for selling-out part of the funded property of the Institute, and, in order to prevent a result which would be very undesirable, I shall be happy to subscribe the sum of 250*l.* towards defraying the expense of publishing the catalogue of the books, &c., in the library as now proposed. I presume that the actual cost cannot at present be ascertained with certainty, nor is it at all a necessity, as it is evident from the remarks in the annual report that funds will have to be raised for this special purpose, or part of our funded property appropriated in this way, which it would probably be thought desirable to avoid."

Mr. Hansard moved a special vote of thanks to Mr. Brandon for his liberal offer, which, after a few words from the President, was carried by acclamation and amid general applause.

Birmingham Architectural Association.—On Saturday last the members of the above Society paid a visit to Worcester Cathedral and City. On the way to the cathedral the party visited Trinity Church, and inspected the fine ancient roof formerly over the Guesten Hall. On reaching the cathedral they were met by the Dean (the Very Rev. Lord Alwyne Compton, D.D.) and the Rev. Canon Cattley, who drew attention to the most interesting features of the building. Before leaving the church the members inspected the crypt, cloisters, chapter-house, and bells, and obtained a fine view of the surrounding district from the top of the great tower.

Mission House, Poplar.—Princess Christian opened a bazaar on Monday afternoon at Poplar Town-hall, on behalf of a new mission house, to be built in Giraud-street, in connexion with St. Saviour's Church. The building is to be Gothic in style, and of red brick, with York stone dressings, and is to cost 1,000*l.* The site, costing 500*l.*, was given by the Bishop of London's Fund. Mr. Brett A. Elphicke is the architect.

An Interesting Discovery.—During the excavations for the foundation walls of the new Mairie at Arceuil-Cachan, Seine, an ancient burial-place, containing a considerable quantity of human bones, has been discovered. Every skeleton was lying with the head to the west and the feet to the east, whilst beside each skull was an earthenware vase pierced with holes, and ornamented with three series of six perpendicular lines, which are thought to have been intended to simulate tears.

The Artists' General Benevolent Institution.—On Wednesday evening the annual dinner of this institution took place at the Prince's-hall, Piccadilly. The Right Hon. W. H. Smith, M.P., presided, and was supported by, amongst others, Mr. C. T. Newton, C.B., Mr. Horsley, R.A., Mr. Alma Tadema, R.A., Mr. Frith, R.A., Mr. Poynter, R.A., Mr. Marks, R.A., and Mr. Linton (President of the Royal Institute of Painters in Water Colours). After the usual loyal toasts had been proposed and drunk, the Chairman proposed the toast of "The Army, Navy, and Reserve Forces," which was responded to by Col. King-Harman, M.P. The toast of the evening, "Prosperity to the Artists' General Benevolent Institution," was then proposed by the Chairman, who apologised for his inefficiency to do justice to such a toast. In the course of his speech the Chairman remarked that the profession of the artist seemed by some means or other to render him more liable than the rest of the world to those peculiar and exceptional misfortunes which claimed the sympathy of all who benefited by art; and when he said of all who benefited by art, he would remind them that within the last twenty or thirty years there had sprung up a sense of necessity for art which had not existed when he was quite a young man. The Chairman concluded by expressing his sincere hope that so deserving a charity would meet with the liberal support of all present, especially since its funds were not in so flourishing a condition as they had been in the past. Several other toasts followed, including that of the health of the Chairman, which was proposed by Mr. Gregory, M.P. During the evening the treasurer, Mr. Hardwick, announced subscriptions and donations to the amount of 2,456*l.*, which included a donation of 25*l.* from the Chairman.

Pietermaritzburg (Natal).—The foundation stones of a new Baptist Church here were formally laid on the 23rd of March last. The building will be a plain brick structure, having a length of 63 ft. and a width of 34 ft. To the main structure there will also be attached a minor building, which will be divided into two rooms by folding-doors, and forming two vestries, or class-rooms, capable of seating about thirty persons in each. The church, as at present designed, will accommodate 250 people, and, with the addition of a gallery, which is ultimately to be added, it will accommodate 350. The walls are substantially built, having a thickness of 18 in., and will support a tiled roof. The total cost of the chapel, it is estimated, will be 800*l.*, the site costing 500*l.*

Machine-worked Stone Ornament.—In reference to a "Note" in our last number, Messrs. W. & T. Brindle write to say that they did employ an architect to design their villas, their instructions to him being "to design villas having as much work executed by our machinery, and as various as possible, so that when completed the drawings or photographs should stand for us as an 'illustrated catalogue of designs,' and not as a model of architecture at all." We can only say what we did before, that the result was not such as to recommend the system to architects.

"The Chancery-lane Safe Deposit."—In connexion with the description of this establishment, given in our last, we are asked to mention that for the blocks of chambers and offices which adjoin and surround the safe deposit premises, Mr. James Hill, of Queen Victoria-street, supplied upwards of 1,500 sets of special locks and door furniture, the locks being all under master-key arrangements.

Ventilators.—We understand that Kershaw's Patent Pneumatic Ventilators, or their Patent Inlet and Air Diffusers, or both, have recently been used at several public buildings, including the post-offices at Stamford, Leeds, Newcastle, and Watford; the Newport Town-hall; the General Post-office, St. Martin's-le-Grand, London; and at a number of churches, schools, hotels, and other buildings.

The Late Mr. Edmund Reddin's Business.—We are informed that the lease of the wharves and the goodwill of the business carried on at Bankside by the late Mr. Edmund Reddin for upwards of fifty years has been acquired by Mr. R. H. Blatchford, who was for many years connected with Mr. Reddin in the business.

The Surveyors' Institution.—The annual dinner of the Surveyors' Institution will take place at the Holborn Restaurant (Venetian Room), on Monday, June 1st, 1885.

Appointments.—We learn that Mr. Sam. Abbott, M.Inst. C.E., of High-street, Lincoln, has been appointed chief resident engineer to the Buenos Ayres Great Southern Railway Company, and will leave England next month. Mr. Archibald R. Whitehead, who has been engaged with Mr. Abbott for several years on the engineering staff of the Great Northern Railway, and for some time past at Lincoln, will continue the practice at the same offices. ——The Tottenham Local Board of Health have appointed Mr. C. J. Eastow, of Clarence-square, Gosport, sanitary inspector for their district, at a salary of 150*l.* per annum. Mr. Warring, of Birmingham; Mr. Jessop, of Battersea; Mr. Taylor, of Egremont, Cheshire; Mr. Loach, of Handsworth, Birmingham; and Mr. Wilkinson, of Bury, were the other selected candidates.

Civil and Mechanical Engineers' Society. The annual dinner of this Society was held at the Holborn Restaurant on Thursday, the 7th inst. The chair was occupied by the President, Mr. Thomas Cole, and a large number of members and visitors were present. The usual loyal toasts having been duly honoured, Mr. R. H. Willcocks, LL.B., proposed "Success to the Society." The President responded, and in the course of his remarks spoke of the usefulness of the Society and the benefit which had been derived from it by many of the members. He expressed the hope that the large increase in numbers which had taken place during the last year or two would be steadily maintained.

Cooking Apparatus for Large Institutions.—We understand that the Guardians of the Wandsworth and Clapham Union, having inspected Mr. Becker's apparatus at St. Pancras Workhouse, and the "Warrenising" apparatus at Lambeth Workhouse, fitted up in 1872 from Mr. Aldwinckle's plans, have decided upon adopting the apparatus at Lambeth as the model for the cooking apparatus at the new workhouse at Wandsworth.

St. Hugh's (Roman Catholic) Church, Lincoln.—Mr. Albert Vicars, architect, of London, is preparing the design for the above church and presbytery. The whole cost of the building, we understand, will be the gift of the Mayor of Lincoln, Mr. F. J. Clarke.

New Saw for Stone.—The *Deutsche Industrie Zeitung* remarks that in consequence of stone-boring appliances having been successfully constructed with cutting surfaces of black diamond, this material has now been adapted to a saw for stone. An Alsatian factory has commenced the manufacture of this saw, which is put in motion by a steam-engine of two horse-power. The quantity and quality of the work produced are said to be very satisfactory, and the saw is considered applicable to all kinds of stone.

Advantages of Glazed Floors.—The *Baugewerks-zeitung* remarks that large rooms in which there is a good deal of moving about should never have wooden flooring, but should have slabs of stone or tiles, &c., as otherwise the dust is insufferable. This assertion is confirmed by the fact that in the old Berlin Exchange the principal room was always enveloped in a cloud of dust, while now that stone flags have been laid down, nothing of the kind is to be remarked.

Site of the "Cock" Tavern, Fleet-street. The *City Press* states that the Bank of England has purchased for 30,050*l.* the important site of the Cock Tavern and the vacant land in Fleet-street between Chancery-lane and the Law Courts for the erection of new buildings for the accommodation of the large business of the Bank in connexion with the High Courts of Justice.

Examination for Local Surveyors and Inspectors of Nuisances.—We are asked to mention that the Sanitary Institute of Great Britain will hold its next Examination for Local Surveyors and Inspectors of Nuisances on Thursday and Friday, June 4th and 5th, at the Parkes Museum, 74A, Margaret-street, W.

New Government Buildings, Bloemfontein, Orange Free State.—The Government of the Orange Free State have appointed Mr. Lennox Canning, A.R.I.B.A., superintending architect for the new Government Buildings to be erected in the City of Bloemfontein.

The Institution of Civil Engineers.—The President's *conversazione* will be held, by permission of the Executive Council, in the International Inventions Exhibition, South Kensington, on Friday, June 5, from 9 to 12 p.m.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Public Hall and Institute, Slough	The Committee	25*l.* and 15*l.*	June 24th	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Additional Offices, &c., Town Hall	Bootle-cum-Linacre Corporation	J. Alexander	May 19th	ii.
Painting Cavalry Barracks, &c., York	War Department	*Official*	do.	ii.
Thames Ballast and Sand	Admiralty	do.	do.	ii.
Scavengering, Watering, &c.	St. Saviour's Bd. of Wks.	do.	May 20th	xiii.
School for Girls	Kent Weslyn Methodist School Assoc., Lim.	Ruck, Son, & Smith	May 22nd	ii.
Enlargemnt of County-Court, Burtn-on-Trent	Com. of H.M. Works	*Official*	do.	ii.
Cottages, Watch-room, &c.	Admiralty	do.	do.	ii.
Machinery House	Met. Asylums Board	H. Jarvis & Sons	May 23rd	ii.
Pulling-down and Rebuilding Stable, &c.			do.	ii.
Removal of Street Letter-Boxes	General Post-Office	*Official*	do.	ii.
Sewerage Works	Colne, &c., Local Board	H. Bancroft	May 25th	ii.
Board-room, Offices, &c.	Grdns. Holborn Union	H. Saxon Snell & Son	May 26th	ii.
Firewood	Lewisham Union	*Official*	May 27th	xx.
Granite, Ballast, Hoggin, and Flints	Hackney Board of Wks	J. Lovegrove	do.	ii.
Paving and Kerbing Works	Hendon Local Board	*Official*	May 28th	xiii.
Guernsey Granite and York Paving	Canterbury Cor.	J. G. Hall	May 29th	ii.
Earth and Concrete Carriers, and other works	Walthamstow Lcl. Bd.	G. B. Jerram	do.	xx.
Wooden Troughing, Staging, &c.	do.	do.	do.	xx.
New Schools	Redruth School Board	G. B. Nichols & Sons	do.	ii.
Foot Bridge, Teddington	Teddington Local Brd.	G. Pooley & E. Thompson	June 1st	ii.
New Workhouse Buildings	Grdns. Knighton Union	*Official*	June 3rd	xiii.
Construction of Reservoir	Dewsbury, &c., Waterworks Committee	Bateman & Hill	do.	ii.
Breeze	Commercial Gas Co.	*Official*	June 5th	xx.
Ornamental Fence on New Sea Wall	Hove Commissioners	do.	June 6th	xiii.
Schools, &c.	Tottenham Local Board	E. & E. B. Ellis	Not stated	xiii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Clerk of Works	Leeds Corporation	110*l.*	May 19th	xix.
Surveyor	Blackpool Corporation	300*l.*	May 20th	xviii.
Road Foreman	Cor. Burton-on-Trent	104*l.*, &c.	May 21st	xix.
Town Surveyor	Wednesbury Locl. Brd.	200*l.*	do.	xviii.
Assistant Surveyor of Highways	Vest. St. Mary, Islingtn	150*l.*	June 9th	xviii.

TENDERS.

For the main wing of the new President's House, Bloemfontein, Orange Free State, South Africa, for the Government of the Orange Free State. Mr. Lennox Canning, A.R.I.B.A., architect, Bloemfontein. Quantities supplied:—

	No. 1. In Brick.	No. 2. In Stone.
Jesse Smith & Son, Pietermaritzburg, Natal	£16,724	£18,699
R. Bullen, Port Elizabeth	12,890	16,260
J. J. Kirkness, Bethlehem, Orange Free State	13,032	14,517
Richard Wocke, Bloemfontein	12,309	14,205
Firbank & Co., London and Cape Colony	10,700	13,800
Lang & Royce, Queenstown, Cape Colony	10,510	12,200*

* Accepted. A tender No. 3 was sent in by this firm for £11,100.

For the erection of new Board Schools, for 300 infants, at Chadsmoor, for the Cannock School Board. Mr. Benjamin Baker, architect, Willenhall. Quantities by the architect:—

G. & F. Higham, Wolverhampton	£1,842	0	0
A. Lynex, Walsall	1,337	0	0
J. Reynolds, Cannock	1,305	0	0
Bradney & Co., Wolverhampton	1,291	0	0
A. F. Whittoms, Stafford	1,281	0	0
S. Wooton, Bloxwich	1,256	0	0
R. Barton, Hednesford	1,252	0	0
M. Anderson, Cannock	1,250	0	0
J. Guest, Stourbridge	1,225	0	0
T. Mason, Hednesford (accepted)	1,196	0	0

For new chapel-of-ease in parish of Sprowston, for the Rev. E. F. Linton. Mr. Arthur R. G. Fenning, architect, 10, Lincoln's Inn-fields, London:—

W. & H. Castle, London	£2,695	0	0
Cornish & Gaymer, North Walsham	2,345	0	0
W. Wilkins & Wilkin, Norwich	2,250	0	0
D. C. Jones & Co., Gloucester	2,229	0	0
J. Downing & Son, Norwich	2,198	0	0
R. Wegg, Norwich	2,142	0	0
J. Youngs & Son, Norwich	2,097	0	0
G. E. Hawes, Norwich (accepted)	2,060	0	0

For alterations, additions, and fittings to 15, Eastcheap. Mr. R. Fabian Russell, architect, 6, Moorgate-street. Quantities supplied:—

Hall, Bedall, & Co.	£2,564	0	0
Ashby Bros.	2,498	0	0
Woodward	2,466	0	0
Colls & Son	2,390	0	0

For alterations and additions, 32, Charles-street, Mayfair. Mr. R. Fabian Russell, architect, Mount-street, W.:—

Woodward	£670	0	0
Morris	650	0	0
Pope	620	0	0
W. Smith	538	0	0

For alterations and additions, 10, Hyde Park-terrace. Mr. R. Fabian Russell, architect:—

Woodward	£569	0	0

For alterations and additions to 40, Curzon-street, Mayfair. Mr. R. Fabian Russell, architect:—

Woodward	£539	0	0

For building retort-house, coal-store, engine-house, boiler-house, brick liquor-tank, stack, and sulphate-shed, for the Crays Gas Company, Kent. Plans and specification by Mr. F. Morris, C.E.:—

T. Knight, Northfleet	£2,898	7	0 !
J. & H. Robus, Lower Sydenham	2,400	0	0
F. Wood, Chislehurst	2,197	0	0
C. F. Stebbings, Sidcup	2,090	0	0
W. Schofield, Bucklersbury	2,066	0	0
E. Proctor, Woolwich	2,050	0	0
T. Knight, Sidcup	1,955	0	0
S. Cutler & Son, Millwall	1,790	0	0
S. Chafen, Rotherhithe	1,597	0	0
W. Armstrong, Chiswick	990	0	0 !

For taking down the older part of buildings and rebuilding same in the rear of No. 1, Friar-street, Reading, for Mr. W. F. Blandy. Mr. Fred. W. Albury, architect:—

W. H. Woodroffe	£3,087	0	0
Geo. Wernham	2,543	0	0
Higgs & Sons	2,520	0	0
J. Bottrill	2,490	0	0
T. H. Kingerlee	2,295	0	0
Geo. Searle (accepted)	2,280	0	0

For the erection of three shops and premises on the west side of Blagrave-street, Reading, for Mr. J. H. Blagrave. Mr. Fred. W. Albury, architect:—

S. Denton	£3,139	19	0
T. H. Kingerlee	3,095	0	0
Geo. Searle	3,051	0	0
Higgs & Son	2,999	0	0
W. H. Woodroffe	2,998	0	0
J. Bottrill	2,970	0	0
Wernham (accepted)	2,813	17	0

For alterations and additions to The Cottage, Calcot Park, Tilehurst, for Mr. J. H. Blagrave. Mr. Fred. W. Albury, architect:—

Geo. Wernham (accepted)	£222	18	0

For a residence at Camberley, Surrey, for Dr. W. H. Twort. Mr. Fred. W. Albury, architect:—

Henderson (accepted)	£958	0	0

For the erection of coal-store, convertible into retort-house, for the Hastings and St. Leonard's Gas and Coke Company. Messrs. S. & A. Smith, architects, Havelock-road, Hastings. Quantities by the architect:—

J. Howell & Son	£5,080	0	0
J. W. Rodda	5,050	0	0
C. Hughes	5,026	0	0
P. Jenkins	4,700	0	0
F. Cruttenden (accepted)	4,520	0	0

For the erection of steel roof to same:—

W. H. Lindsay & Co., Paddington Ironworks (accepted)	£860	0	0

For building schools and offices at St. Andrew's-street, in the Lambeth Division, for the School Board for London. Mr. T. J. Bailey, architect. Quantities by Messrs. Barber, Boxall, & Barber:—

Turtle & Co.	£14,305	0	0
Chappell	13,857	0	0
Reading	13,550	0	0
Brass	13,472	0	0
Hart	13,427	0	0
Shurmur	13,392	0	0
Wood	13,300	0	0
Scrivener & Co.	13,268	0	0
Downs	13,021	0	0
Howell & Son	12,986	0	0
Lathey Bros.	12,972	0	0
Tongue	12,960	0	0
Gentry	12,950	0	0
Wall Bros.	12,940	0	0
Wm. Oldrey	12,900	0	0
H. L. Holloway	12,890	0	0
Boyce	12,850	0	0
Grover & Son	12,800	0	0
Jerrard	12,693	0	0
Croaker	12,650	0	0
Stimpson & Co.	12,640	0	0
C. Wall	12,587	0	0
Cox	12,583	0	0
Holloway Bros.	12,578	0	0
Atherton & Latta	12,495	0	0
W. Johnson	12,200	0	0

For building new schools and offices at Biscay-road, in the Chelsea division, for the School Board for London. Mr. T. J. Bailey, architect. Quantities by Messrs. Barber, Boxall, & Barber:—

Patman & Co.	£15,703	0	0
Turtle & Co.	15,387	0	0
Chappell	14,780	0	0
Lathey Bros.	14,699	0	0
Reading	14,649	0	0
Brass	14,591	0	0
Wm. Oldrey	14,000	0	0
Howell & Son	13,995	0	0
Gentry	13,860	0	0
Wood	13,850	0	0
Boyce	13,790	0	0
Scrivener & Co.	13,742	0	0
Hart	13,694	0	0
Grover	13,642	0	0
Wall Bros.	13,603	0	0
Jerrard	13,589	0	0
Downs	13,552	0	0
Cox	13,540	0	0
H. L. Holloway	13,507	0	0
Shurmur	13,462	0	0
Atherton & Latta	13,400	0	0
Stimpson & Co.	13,400	0	0
C. Wall	13,352	0	0
W. Johnson	12,900	0	0

For the erection, of proposed Corn Exchange, Abingdon, Berks. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

Dover, Oxford	£2,870	0	0
Wilkinson, Eynsham	2,745	0	0
Tarrant, London	2,700	0	0
Woodbridge, Maidenhead	2,674	0	0
Morris, Reading	2,648	14	2
Selby, Oxford	2,639	0	0
Martin, Wells, & Co., Aldershot	2,579	0	0
Lucas & Son, Kensington	2,576	0	0
Taylor & Grist, Aylesbury	2,563	10	0
Curtis, Abingdon	2,504	0	0
Allen & Son, Kilburn	2,482	0	0
Wheeler, Wantage	2,450	0	0
Smith & Son, Norwood	2,396	0	0
Claridge, Banbury	2,310	0	0
Carless & Co., Richmond	2,267	0	0
Simmonds, Reading	2,244	0	0
Kingerlee, Oxford	2,190	0	0
Buckle & Wheeler, Abingdon	2,089	0	0
Williams, Abingdon	2,057	0	0

For the erection of proposed Cottage Hospital, Abingdon, Berks (including fittings). Mr. C. Bell, architect. Quantities by Mr. H. Lovegrove:—

Allen & Son, Kilburn	£2,140	0	0
Martin, Wells, & Co., Aldershot	2,065	0	0
Lucas & Son, Kensington	1,963	0	0
Morris, Reading	1,946	0	0
Tarrant, London	1,896	0	0
Williamson, Eynsham	1,895	0	0
Woodbridge, Maidenhead	1,885	0	0
Dover, Oxford	1,885	0	0
Wheeler, Wantage	1,870	0	0
Taylor & Grist, Aylesbury	1,850	0	0
Selby, Oxford	1,828	0	0
Curtis, Abingdon	1,810	0	0
Kingerlee, Oxford	1,790	0	0
Simmonds, Reading	1,731	0	0
Smith & Son, Norwood	1,704	0	0
Claridge, Banbury	1,621	0	0
Carless & Co., Richmond	1,589	0	0
Williams, Abingdon	1,471	0	0
Buckle & Wheeler, Abingdon	1,443	0	0

Accepted for alterations, South Hampstead Branch of the London and South-Western Bank (Limited). Mr. C. Bell, architect. Quantities by Mr. Henry Lovegrove:—

G. Stephenson	£649	0	0

Accepted for alterations, Clapton Branch of the London and South-Western Bank (Limited). Mr. C. Bell, architect. Quantities by Mr. H. Lovegrove:—

Stewart	£650	0	0

For the erection of new Wesleyan Chapel, at Lydd. Mr. Charles Bell, architect. Quantities by Mr. H. Lovegrove:—

Clements & Son, Folkestone	£1,290	0	0

For alterations and repairs to the Thatcher's Arms, Tolleshunt D'Arcy, near Maldon, for Messrs. T. Daniell & Sons, West Bergholt. Mr. J. W. Start, architect, Colchester:—

R. Law, Layer Breton (accepted)	£117	10	6
W. Rudrum, Tolleshunt D'Arcy	110	5	0

Accepted for villa residence, Surbiton-on-Thames, for Mr. R. A. Morris, J.P. Mr. J. Buckley Wilson, Swansea, and Mr. T. E. Lidiard James, Chancery-lane, London, architects:—

Turtle & Appleton, London (accepted)	£1,544	0	0

For the erection of a revivifying-shed, for the Hastings and St. Leonard's Gas and Coke Company. Messrs. S. & A. Smith, architects, Hastings. Quantities by the architects:—

J. Howell & Son	£629	0	0
J. W. Rodda	620	0	0
C. Hughes	600	0	0
P. Jenkins	550	0	0
F. Cruttenden (accepted)	496	0	0

For new house at Lockner Wood, Chilworth, Surrey, for Mr. St. George Mivart, F.R.S. Mr. Fred. A. Walters, architect, 4, Great Queen-street, Westminster. Quantities by Mr. J. T. Carew, 22, Surrey-street, Strand:—

	House.	Conservatory.
Buckle & Wheeler	£2,924	£135
Maides & Harper	2,700	160
Tompsett & Kingham	2,524	137
Whitburn	2,440	170
Mitchell Bros.	2,375	155
Carless & Co.	2,267	127

Accepted for the erection of Mercantile-chambers extension, Quayside, Newcastle-on-Tyne, for Mr. Thos. Harper. Mr. J. C. Parsons, architect:—

Walter Scott	£2,350	0	0

For heating apparatus at the new Working Lads' Institute, Whitechapel, London. Mr. George Baines, architect, Great Winchester-street:—

Gardners, London	£163	0	0 !
Strode & Co., London	126	0	0
J. L. Bacon & Co., London	75	0	0
J. Jeffreys, London	70	0	0
W. G. Cannon, London	69	10	0
John King (Limited), Liverpool*	50	0	0 !

* Accepted.

For gasfittings at the new Working Lads' Institute, Whitechapel, London. Mr. George Baines, architect:—

R. W. Winfield & Co., London	£144	12	2 !
T. Brawn & Co., Birmingham	120	4	9
Strode & Co., London	114	9	0
Vaughan & Brown, London	105	16	5
Gardners, London	83	10	6
W. G. Cannon, London	68	12	0
Keeling, Teale, & Co., London*	68	9	0 !

* Accepted.

For alterations to the Bedford Music-hall, Arlington-street, Camden Town, for Mr. Geo. Fredericks. Mr. E. Clark, architect:—

T. L. Green	£530	0	0
M. Manley	458	0	0
Feltham Bros.	397	0	0
Johnson & Manners (accepted)	395	0	0

For alterations and additions to 43, Ovington-square, Chelsea, for Major Charles Mercier. Mr. Clark, architect:—

Salmon	£1,950	0	0
Bray & Pope	1,798	0	0
W. R. Cubitt	1,775	0	0
G. Mower	1,725	0	0
Scharien & Williams	1,723	0	0
Bolding	1,479	0	0
Feltham Bros. (accepted)	1,398	0	0

For alterations at the Masons' Arms, Maddox-street, Regent-street, for Mr. Chas. Hollis. Mr. E. Clark, architect:—

Green	£337	0	0
Anley	295	0	0
Johnson & Manners (accepted)	215	0	0

For alterations and additions to the Seven Sisters Hotel, Page-green, Tottenham, for Mr. James Oddy. Mr. E. Clark, architect:—

Homan & Son	£873	0	0
T. L. Green	838	0	0
P. Hart	798	0	0
J. Linzell	797	0	0
G. Mower	738	0	0
A. G. Bolding (accepted)	697	0	0

For alterations to the Weavers' Arms public-house, Bethnal-green. Mr. Joseph Harris, architect:—

Lascelles	£875	0	0
Allen & Sons	740	0	0
Stiling	669	0	0
Russell	658	0	0

For additions and alterations to Bryncaevan, in the county of Carmarthen. Mr. J. B. Wilson, architect, Swansea:—

Thomas Watkins & Jenkins	£6,000	0	0
Ditto (alternate)	3,940	0	0
Geo. Mercer	5,500	0	0
Ditto (alternate)	3,817	0	0
Thomas Brown & Johns (alternate)	5,874	0	0
D. C. Jones & Co.	4,184	0	0
Jas. Thomas (accepted)	3,750	0	0

For the erection of pair of houses, Brunswick-road, Sutton, Surrey, for the Sutton Land and House Company (Limited). Mr. Herbert D. Appleton, architect, 157, Wool Exchange:—

J. B. Potter (too late)	£1,400	0	0
R. J. Humphris	1,345	0	0
W. Robinson	1,085	0	0
A. H. Harris	1,038	0	0
G. Burrage (accepted)	989	0	0

For alterations and additions to the Pavilion, Greenwich Park, for Messrs. Gatti & Conceprio. Mr. Henry Roberts, architect and surveyor, Lewisham-road:—

G. Meager	£337	12	0
H. L. Holloway, Peckham	290	0	0
T. I Cracknell	265	0	0
Hubble & Trott, Deptford	260	0	0
G. W. Sly, Greenwich (accepted)	225	0	0

For the erection of Girls' Home, Bloomsbury. Messrs. Borer & Dobb, architects. Quantities by Mr. Henry Lovegrove, 26, Budge-row:—

Ashby & Horner	£8,928	0	0
Scrivener & Co.	8,865	0	0
Holland & Hannen	8,760	0	0
Dove Bros.	8,315	0	0
Woodward	8,200	0	0
Brass & Son	7,777	0	0

For the erection of thirteen shops and for the repairs to thirteen houses, and other incidental works in the Kentish Town-road, for Messrs. H. H. Bridgman & H. Newson Smith. Quantities supplied by Mr. F. Thomson :—

Thirteen Shops.

Killingback	£4,050	0	0
Manley	3,887	0	0
Brass & Son	3,763	0	0
Nightingale	3,741	0	0
Scrivener	3,688	0	0
Wall Bros.	3,630	0	0
Dixon	3,600	0	0
Gould & Brand	2,593	0	0
Toms	3,502	0	0
Lamble *	3,394	0	0

* Accepted subject to modification.

Repairs.

Brass & Son	£3,125	0	0
Nightingale	3,098	0	0
Wall Bros.	3,029	0	0
Gould & Brand	2,989	0	0
Scrivener	2,918	0	0
Toms	2,914	0	0
Killingback	2,632	0	0
Dixon	2,390	0	0
Manley	2,167	0	0
Lamble *	1,963	0	0

* Accepted subject to modification.

For detached house, Euston-road, Great Yarmouth, for Mr. Frank Arnold. Messrs. Bottle & Olley, architects, Great Yarmouth :—

Contract No. 1.

Excavator's, Bricklayer's, Tiler's, Mason's, and Plasterer's Work.

J. Leggatt	£870	0	0
Cork & Beech	849	0	0
T. Howes	849	0	0
E. Howes (accepted)	825	0	0

Contract No. 2.

Carpenter's, Joiner's, Ironmonger's, Plumber's and Glazier's, and Painter's Work.

R. Davy	£560	0	0
T. S. Cooper	547	0	0
B. Springall	491	0	0
Rand & Cooper (accepted)	480	0	0

For the erection of house and stabling at Thorpe Arnold, near Melton Mowbray, for Mr. A. Brocklehurst. Mr. W. Millican, architect, Leicester :—

Foster & Dicksee, Rugby	£6,550	0	0
C. Barnes, Melton Mowbray	5,893	0	0
Smith & Lunn, Newark	5,817	0	0
J. J. Fast, Melton Mowbray	5,775	0	0
T. & H. Herbert, Leicester	5,560	0	0
Baines & Turton, Nottingham	5,500	0	0
Bell & Sons, Nottingham	5,466	0	0
Black, Barrow-on-Soar	5,398	0	0
Clarke & Garrett, Leicester	5,319	0	0
J. O. Jewsbury, Leicester	5,159	0	0

For rebuilding No. 24, Greek-street, Soho, for Mr. H. Cooper, under the superintendence of Mr. John Waldram, C.E., 16, Craven-street, Strand. Quantities by Mr. Henry J. Treadwell, 5, Agar-street, Strand :—

C. Ansell	£1,645	0	0
C. Killingback	1,547	0	0
A. Bush	1,489	0	0
Grover & Son	1,415	0	0
Brown & Harris	1,366	0	0
Munday & Son	1,340	0	0

For painting and decorating the Oddfellows' Hall, Albert-square, Stalybridge, for the Stalybridge Oddfellows' Social Club and Institute Company (Limited). Mr. Gregory Gill, architect and surveyor, Stalybridge :—

Goodall & Co., Manchester	£185	0	0
S. Kendall, Huddersfield	129	0	0
R. Bennett, Manchester	128	0	0
W. F. Hobbs, Stalybridge	93	0	0
Greenhalgh & Shortland, Ashton-under-Lyne	89	10	0
P. M. Mellor, Ashton-under-Lyne *	83	0	0

* Accepted.

For renovating the General Baptists' Chapel, Wakefield-road, Stalybridge, for the Trustees. Mr. Gregory Gill, architect :—

Goodall & Co., Manchester	£179	0	0
P. M. Mellor, Ashton-under-Lyne	125	0	0
W. F. Hobbs, Stalybridge	124	0	0
Greenhalgh & Shortland, Ashton-under-Lyne	120	0	0
R. Bennett, Manchester (accepted)	116	0	0
R. Hitchin	109	10	0

For the erection of St. Mary's (R.C.) Church, Leek, Staffordshire :—

John Fielding	£11,900	0	0
H. R. Inskip, Longton	11,186	0	0
T. Grace, Leek	10,955	0	0
W. Collis, Longton	10,547	0	0
R. Bradbury	10,390	0	0
J. L. Ward, Manchester	10,190	0	0
T. Heath, London	9,830	0	0
J. Rowbotham, Birmingham	9,240	0	0
Horsman & Co., Wolverhampton	9,013	0	0
T. Grosvenor, Tunstall, Stafford	8,996	0	0
Barker & Son, Handsworth, Birmingham (accepted)	8,890	0	0

For 6,530 yards super. of wood paving, Silver-street and Church-street, Kensington :—

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Cooper	12	6	per sup. yard.
Casey	9	3	,,
Mears	9	0	,,
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Muldoon	8	9	,,
Aldred	8	4	,,
Owen	8	4	,,
Thorn	8	0	,,
Mowlem & Co.	8	0	,,
Nowell & Robson	7	10 and 7	9 per s. yard.
Improved Wood Paving Company * (accepted)	7	8	,,

New Bakeries at Battersea.—For "Cooke & Son" in the list of tenders for these works, published in last week's *Builder* (p. 677), read "B. Cooke & Co.," of Church-road, Battersea.

Metropolitan Music Hall.—In the list of tenders for this work in our impression of last week (p. 677), the amount of Messrs. Langridge & Sons' tender was stated to be 2,500*l.* It should have been 3,500*l.*

SPECIAL NOTICE.— Lists of Tenders frequently reach us too late for insertion. They should be delivered at our Office, 46, Catherine-street, W.C., *not later than Four p.m.* on THURSDAYS.

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